Textile World

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CONTENTS NOVEMBER, 1936

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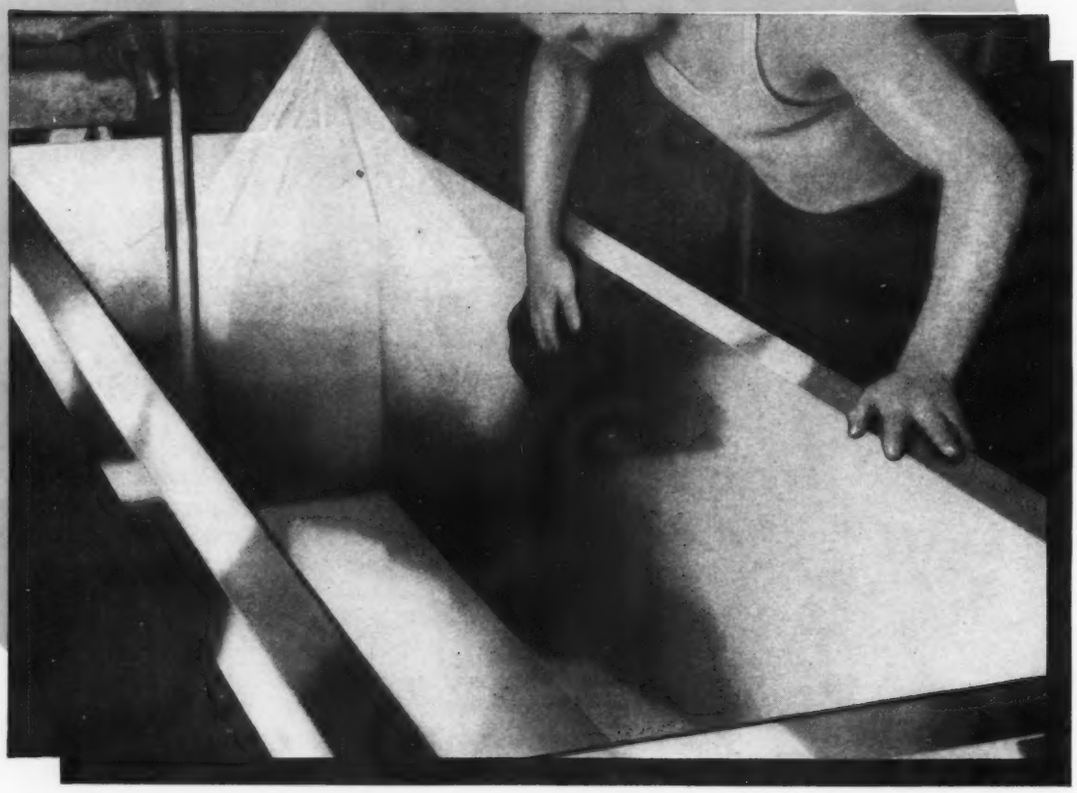

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Textile World

November, 1936

Editor: DOUGLAS G. WOOLF

This Has Happened:

EVERY once in a while, events seem to crowd themselves prolifically into a limited period of time. The last month has been such a period in textiles.

In the cotton division, the hope we expressed on this page in the last issue was more than fulfilled. A line of future action *was* outlined, and the industry *was* re-dedicated to the cause of making itself "a permanently safe place in which to work and to invest."

First, there was the outline of a stabilization plan which, if further study proves its feasibility, would aim to correct violent and disastrous movements in the market for textile products, as well as to cooperate in the retirement of obsolete equipment. Then, there was the machinery set up for effective coordination among the various groups in the industry, as well as with outside groups whose interests touch upon those of the cotton division. Next, there was the novel plan for a direct approach to the Japanese import problem, through a visit of members of the industry to that country. Finally, there was the endorsement of a move to augment the industry's promotional fund by joint contributions from shippers and spinners.

Even though there will be disagreement as to the feasibility and potential effectiveness of specific points in the above program, the main point is that there *is* a program. Dr. Claudius T. Murchison demonstrated his readiness and ability to carry on the heritage of leadership which goes with the job of president of the Cotton-Textile Institute.

In other branches of the industry, also, events were in the making. Silk and rayon throwsters, through the Throwsters Research Institute, have under way a movement toward effective stabilization of wages and hours. Underwear manufacturers, through their institute, have adopted a constructive program embracing such activities as trade practice rules, cost study in connection with the Robinson-Patman Act, price protection clauses, etc. The head of the wool manufacturers' group has come out strongly for a form of industrial self-regulation or a type of limited government regulation to correct evils which otherwise would inevitably lead to public demand for governmental interference and eventual control.

In the industry as a whole, a conference of textile school deans under the auspices of the Textile Foundation disclosed a further push toward more scientific and more effective textile education. Progress in a textile distribution study, also financed by the Foundation, was reported.

To this observer, the main significance of these and other current stirrings in textile circles is the encouraging thought that better times have not brought smugness. In the midst of active and profitable operation, the industry is busily mending its fences so as to keep out the wolves of wage-slashing, price-cutting and other uneconomic practices which eventually have always ruined past rallies in this industry. It has adopted, in advance, the psychology advocated last month by Willard L. Thorp when he said "depression is just around the corner," and urged manufacturers to think in those terms rather than to yield to the over-confidence of a boom period.

Jack Card, in a letter to this editor published in last month's issue, complained that "experience has taught me that we never do anything about a situation until the situation is too bad to do anything about." The industry is going to make you eat those words, Jack Card!

The Editor Says:

So What?

IT'S almost unfair to pick on George L. Berry. He's such easy game. Seldom has a man in public life made himself vulnerable so consistently as does the "coordinator for industrial cooperation."

His latest off-guard maneuver is a series of reports on the major industries, all apparently pointed toward the same thesis: From 1914 to 1933, labor did not receive its fair share of earnings.

A press release states that his study of the textile industry group, including cotton goods, showed "in the 20-year period from 1914 to 1933 production and productivity per wage earner fluctuated according to the business cycles, while employment remained somewhat stationary and the share of value added by manufacturing and paid out in wages consistently declined."

Well, in the first place, linking all the apparel groups into a "textile" study is the height of statistical silliness.

In the second place,—even taking the separate cotton textile section—stopping the study at 1933 and thus failing to record the changes from 1933 to date makes the study not only valueless, but grossly misleading. During that period, employment in the cotton textile industry has gone far above the 1933 level, and on a par with that of 1929; hourly wage rates are now materially above 1929.

In the third place—well, Dr. C. T. Murchison has supplied comment for the third, fourth, fifth and n'th place: "So what?"

■

The Quality Road

WE are not familiar with, nor directly concerned with, the practices of retail stores leading toward standardization in the women's garment field, as outlined by Julius Forstmann, president of the Forstmann Woolen Co., in his recent statement on "Standardization in the Fashion Industry."

With his underlying thesis, however, we *are* concerned —and very much in sympathy. Mr. Forstmann has been one of our major prophets of quality merchandise. Again and again—and at times when it was difficult even to be heard in the din of price sales and general debasement, he has preached the quality doctrine.

If the women's garment industry—and groups identified with it, including of course the fabric manufacturers —are to achieve real prosperity, a sure approach is through the quality route pointed out by Mr. Forstmann.

■

He Always Says Something

WITH every speech he makes, Robert West enhances his reputation for clear thinking. And that's the highest compliment one can pay a speaker.

His latest contribution, at the Cotton-Textile Institute meeting last month, is an eloquent example. After a clear, concise analysis of the cotton textile problem, he suggests two "modest" procedures: (1) integrated statistics which will make possible a sound appraisal of the total available supply of stock and rate of off-take of cotton textiles; and (2) raising of the "point of margin" at which cotton manufacturers restrict sales and production, from a point representing, as it has in the past, actual cash loss, to a point which represents at least full cost.

These two suggestions are right down our alley. On the first point, we think it evident that the element of guess-work will never be taken out of mill policies until a complete picture, embracing the distributing as well as the producing end, is available.

On the second point, Mr. West expresses the trouble in this picturesque way: "Cotton textile producers put in their stop loss orders on merchandise at too low a figure." Is it not possible that complete statistical information will alter this psychology—in other words that following out Mr. West's first proposal would automatically insure the observance of the second?

It is not the suggestions that are "modest," but rather the man who offers them.

■

A Dollars-and-Cents Study

THE presentation, on Nov. 4, of the progress report on the study of trends in the organization of production and distribution in the textile industry was a more important piece of news than many manufacturers may realize.

In the first place, that study is directed toward a subject which should interest—believe it or not—every unit in the industry: vertical integration. Changing those dollar words for five-cent ones, it is an attempt to find out what conditions bring failure or success to those companies which have extended their operations to the next, or preceding, stages of production or trade. Simple examples are weavers who go into garment fabrication—and, going the other way, retailers who establish their own manufacturing plants.

Within the primary textile industry itself, the weaver who adds a finishing plant is going through the process of vertical integration. That's why we said the subject is of interest to *all* units.

In the second place, the backing which this study enjoys insures its conduct in a fair, broad and effective manner. Proposed by the economic research committee of the U. S. Institute for Textile Research, sponsored by that committee in cooperation with the heads of the leading textile associations, financed by the Textile Foundation, the study is being made by the Wharton School of the University of Pennsylvania—an organization which long ago earned the respect and confidence of the textile industry.

So, as further reports on this investigation become available, we suggest that our readers forget the expensive words used to describe it, and remember only that it has dollars-and-cents value to them.

Textile School Deans Hold Conference

THE fifth of a series of conferences sponsored by the Textile Foundation and attended by the deans of the 12 textile schools in the United States, was held last month in New York. The conference was attended by Franklin W. Hobbs, chairman, and Frank D. Cheney of the board of directors of the Textile Foundation, F. M. Feiker, who presided at the conference meetings, E. T. Pickard, secretary of the Foundation, and the following deans:

Chas. H. Eames, Lowell Textile Institute; W. D. Fales, Rhode Island School of Design; George Walker, New Bedford Textile School; H. W. Nichols, Bradford Durfee Textile School; Dr. E. W. France, Philadelphia Textile School; Thomas Nelson, North Carolina State College; H. H. Willis, Clemson College; C. A. Jones, Georgia School of Technology; E. W. Camp, Alabama Polytechnic Institute; J. B. Bagley, Texas Agricultural and Mechanical College; M. E. Heard, Texas Technological College; Dr. W. H. Dooley, Straubenmuller Textile High School.

During the conference the following guests were entertained at luncheon:

Dr. Claudius T. Murchison, president, Cotton-Textile Institute; Arthur Besse, president, National Association of Wool Manufacturers; W. Ray Bell, president, Association of Cotton Textile Merchants; F. E. Simmons, Underwear Institute; Earl Constantine, managing director, National Association of Hosiery Manufacturers; C. Whitney Dall, president, National Rayon Weavers Association; F. S. Blanchard, Pacific Mills; Albert L. Scott, president, National Association of Finishers of Textile Fabrics; Stanley B. Hunt, Textile Economics Bureau, Inc.; Louis W. Fairchild, Fairchild Publications; Douglas G. Woolf, editor, TEXTILE WORLD; A. F. Allison, managing director, International Association of Garment Manufacturers; Ernest C. Morse, managing director, Associated Wool Industries; Russell T. Fisher, president, National Association of Cotton Manufacturers; Dr. L. A. Olney, Lowell Textile Institute; Theodore Haywood, Philadelphia.

Each of the guests made a three-minute talk making observations and suggestions, and offering the deans fullest cooperation of themselves and their trade groups in the effort to adapt textile education to better meet the needs of modern industry.

Textile Situation Continues Strong

ACTIVITY and firmness continue to feature most branches of the textile industry. Production for the industry as a whole during the first three-quarters of this year ran 17% ahead of the corresponding period of 1935, according to TEXTILE WORLD's index of mill activity. All of TEXTILE WORLD's price index numbers either held their own or advanced in October. Profit possibilities have improved in practically all divisions. For example, manufacturing margins in carded cotton goods averaged higher in October than for any month during the period when costs have been comparable—that is, since the beginning of the NRA code in 1933. (See page 120).

It is generally recognized of course that a reaction to the active business experienced in recent months, particularly in the cotton branch, might be in order at any time, and in fact some observers have been predicting a slump for the last six weeks of the year. No matter what happens in volume during the rest of the year, however, it is almost certain that 1936 will record itself as the best textile year since 1929.

Rayon Output Up 8%

TOTAL production of rayon in this country during the first nine months of the year was approximately 204,000,000 lb. as compared with 188,000,000 lb. in the corresponding period of 1935, an increase of 8%, according to the *Textile Organon*. This total is based on actual figures for viscose rayon but on an estimate for acetate. If this rate of increase is continued during the balance of the year, it will mean that the total for 1936 will be just about what was estimated in TEXTILE WORLD's Rayon Issue in September, namely 275,000,000 lb.

Partial Exemption Under Healey Act

A PARTIAL exemption for 90 days with regard to the girls between the ages of 16 and 18 already employed by cotton textile manufacturers has been recommended in connection with the Walsh-Healey Act by the Public Contracts Board of the Department of Labor and approved by Charles O. Gregory, acting secretary.

The board, however, declined to recommend an exemption from the 40-hour week and 8-hour day provisions which had been requested by the Cotton-Textile Institute, pointing out that the overtime rate provisions of the regulations enabled manufacturers a certain amount of latitude with regard to shipping crews and employees engaged in the operation of dyeing, bleaching, drying and mercerizing machines when used as a part of a continuous chemical process where the goods would be jeopardized by interruption.

The board declined to pass on the matter of exempting certain custodial, supervisory, maintenance, and clerical employees on the ground that they were not within the act. These exemptions had been considered by the board at the first public hearing held by the Department of Labor under the new Walsh-Healey Act.

SPECIAL PROCESSING SECTION

A special section devoted to the processing branch of the textile industry appears in this issue commencing on page 89.

World Conference?

THE United States Government through the Department of Labor is considering inviting the International Labor Organization to hold a World Textile Conference here next April or May, it became known Nov. 5. The meeting would discuss all major textile questions and might be limited to 14 countries each employing more than 50,000 textile workers.

End of the Road

THREE stockholders and proxies representing 67% of the shares outstanding took only five minutes to dissolve the Amoskeag Mfg. Co., Manchester, N. H., whose origins trace back to 1804, when the final meeting took place on Oct. 28.

Referee Black said on Oct. 29 that a final dividend of 40%, completing full payment, would be mailed to the bondholders the next day. Additional interest checks may be sent out later.

This and That

"Jute—An Enemy of Cotton" is the title of an article prepared by Donald Comer and distributed to the southern press. . . . "The days of the potent jute lobby in Washington are numbered," is Mr. Comer's conclusion.

Carolina Yarn Association held its fall meeting and golf tournament at Pinehurst, N. C., Oct. 29 and 30. Story, with beautiful pictures, will appear in the next issue of TEXTILE WORLD.

S. C. Lamport, in a report to Secretary of Commerce Roper, after return from a trip of investigation abroad, urged aggressive action in attempt to broaden American trade in foreign countries. He stated that business men abroad are amazed "at the lack of interest shown by American merchants and manufacturers in developing their markets, and in our failure to study their requirements as other countries do."

10 Years . . .

Cotton-Textile Institute's anniversary marked by a long look forward

THERE was a birthday celebration—and a good one—at the Cotton-Textile Institute's tenth annual meeting in New York Oct. 28, but actually the backward gaze was subordinated to a long look ahead. The felicitations and the fun at the anniversary banquet were merely the icing on the real birthday cake, which was the program outlined at the sessions during the day. Just to make this metaphor a little more confusing, it might be added that the real birthday cake was bread.

The gaze ahead encountered a vision of four major lines of effort: (1) coordination of the various groups within the industry; (2) establishment of a stabilization agency to function in the marketing of goods and in the retirement of marginal machinery; (3) the dispatch of a mission to Japan to attempt an amicable solution of the pressing problem of increasing imports from that country; and (4) the launching of a broader promotional program financed jointly by cotton shippers and manufacturers.

Dr. C. T. Murchison, president of C.T.I., who told of constructive plans.

On the first of these points, it was not necessary to speculate. To the annual meeting was brought a report of the Coordination Conference held the preceding day and attended by representatives of the regional, State and group associations identified with the cotton textile industry. This had proved to be not merely an attempt at coordination, but an actual first step in a move which promises to be a continuing activity of the future. Definite arrangement was made for similar conferences at least every six months, or at the call of the president of the Institute when particular occasions demanding such action arise.

The possible establishment of a stabilization agency was outlined by Dr. Claudius T. Murchison, president, in his address at the annual meeting. He stated that the Institute had been authorized by its executive committee, and with the approval of its board, "to direct an intensive study toward determining the desirability and practicability of establishing a definite agency of stabilization which will not only function cooperatively in the marketing of goods but will also undertake to expedite and enlarge the current efforts being made to retire or control the industry's supply of marginal or surplus machinery.

"It is not proposed," he emphasized, "that such an agency would be monopolistic in character or that it would normally be a competitor for business. By giving its support at strategic points at appropriate times it should prevent the development of those sudden and severe weaknesses which frighten away buyers and terrorize sellers.

"Although no agency can be devised which could or should stand in the way of long-time price trends, it must be remembered that there is a difference between a price trend and a manufacturing margin, and there is no reason to believe that the latter should not be reasonably uniform whatever be the general trend of price behavior. If such an agency should prove feasible and should actually come into being, it will be through the joint efforts of the manufacturing and distributing groups and will serve equally the interests of both which, in the final analysis, are in harmony."

In explaining the purpose of the third major effort outlined above, negotiation with Japanese exporters, Dr. Murchison stated that the proposal for a solution of the problem on a basis of mutual understanding between the two industries "has met with the friendliest reception from Japanese Government representatives who have been unofficially consulted and their active cooperation is apparently available."

"The proposal has likewise been brought to the attention of the appropriate officials of our Government," he continued, "and although no official action has yet been taken, the conversations leave no room for doubt that our own Government will look approvingly upon our efforts. These considerations, together with the approval by the Institute's board of directors of having the factual situation put before the Japanese by a visiting committee of our mill men, suggests that it may be possible to make a definite announcement of concrete plans within the next few weeks."

The fourth step forward—broader promotion—was outlined by Charles K. Everett, manager of the New Uses Section of the Institute. The time has come, he stated, to take "haphazard financing and resultant haphazard planning out of cotton promotion." The first move in this direction, already taken, has been to induce cotton shippers to contribute to a promotional fund on the basis of 1c. a bale, the contribution to be matched dollar for dollar by the spinners. The idea has already enlisted the hearty support of such important shippers as W. L. Clayton, of Anderson, Clayton & Co.; E. F. Creekmore, of the American Cotton Cooperative Association; John McFadden, of George McFadden & Bro.; Adolph Weil, of Weil Bros.; and Robert J. Mayer, of J. Kahn & Co., the last named being president of the American Cotton Shippers Association.

Naturally it is not expected to raise 2c. a bale on every bale of cotton processed in American mills but a conservative estimate is for a fund of at least $80,000 a year. Mr. Everett outlined the various ways in which this money would be spent.

The sessions of the annual meeting were presided over by Goldthwaite H. Dorr, chairman of the board of the Institute. In his opening remarks, he stated than an anniversary is often a good time to take stock and see if there is any real excuse for the existence of the organization. But, for the Cotton-Textile Institute, it is not necessary to do this, he remarked, because stock has already been taken. This investigation has revealed a real justification for the Institute's being and consequently the officers and directors have set their faces forward.

It is a happy augury, he said, that on the tenth birthday of the Institute, the sun of an active market for the industry's products is breaking out, after having been behind the clouds so long.

A clear exposition of the background and psychology of the Federal Trade Commission was presented at the meeting by Garland S. Ferguson, Jr., a member of the Commission. Of particular interest was his reference to the Robinson-Patman Act. Although naturally guarded in his comments, he helped to define the purport of the act by the following statement:

"Putting it in a very few words, the principal provision of the new law, in my opinion, is that a vendor of goods in interstate commerce cannot give to one customer a lower price or a greater discount than he does to another customer, unless the difference makes 'only due allowance for differences in the cost of manufacture, sale or delivery resulting from the differing methods or quantities.' To be unlawful, however, the discrimination must also tend to substantially lessen competition, or to create a monopoly, or to injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination, or with customers of either of them.'

"The law also prohibits allowances to certain purchasers for advertising and other services that are not open to other purchasers on apportionately equal terms, who are competing with those who do receive the allowances.

"The act has placed on the vendor the burden of proving that his discriminatory price, discount, allowance or service is justifiable."

Referring to the Commission's position in connection with attempts of industry to abandon practices that, while not unfair or unlawful, are unsound, unbusinesslike and uneconomic, Mr. Ferguson stated that the Commission—wisely in his opinion—decided that "while it could not expressly approve an agreement among competitors to continue or abandon practices that were not violative of the law over which it had jurisdiction, it would receive such agreements, if not in contravention of the law, as expressions of the sound opinion of the industry." This resulted in what is generally known as Group II Rules of trade practice conferences. Three of these conferences have been with branches of the textile industry: mending cotton manufacturers in 1925, shirting fabrics in 1931, and cotton converters in July, 1936.

At the luncheon, which came as a recess between the open session in the morning and the executive session in the afternoon, Willard L. Thorp, chief economist of Dun & Bradstreet, spoke briefly. "Depression is just around the corner" was his startling message. By this he meant that every major upward move is followed by a set-back and he believes that it is more profitable during boom times to think in terms of trying to maintain health and guarding against errors which will bring too sharp a decline, than it is to think in what might be called purely recovery terms.

The speakers at the executive session included William M. McLaurine, secretary of the American Cotton Manufacturers Association; Robert R. West, president of the Riverside & Dan River Cotton Mills; Frank I. Neild, president of Neild Mfg. Corp.; William P. Jacobs, secretary of Cotton Manufacturers Association of South Carolina; Leavelle McCampbell, of McCampbell & Co.; and Mr. Everett.

Directors Elected

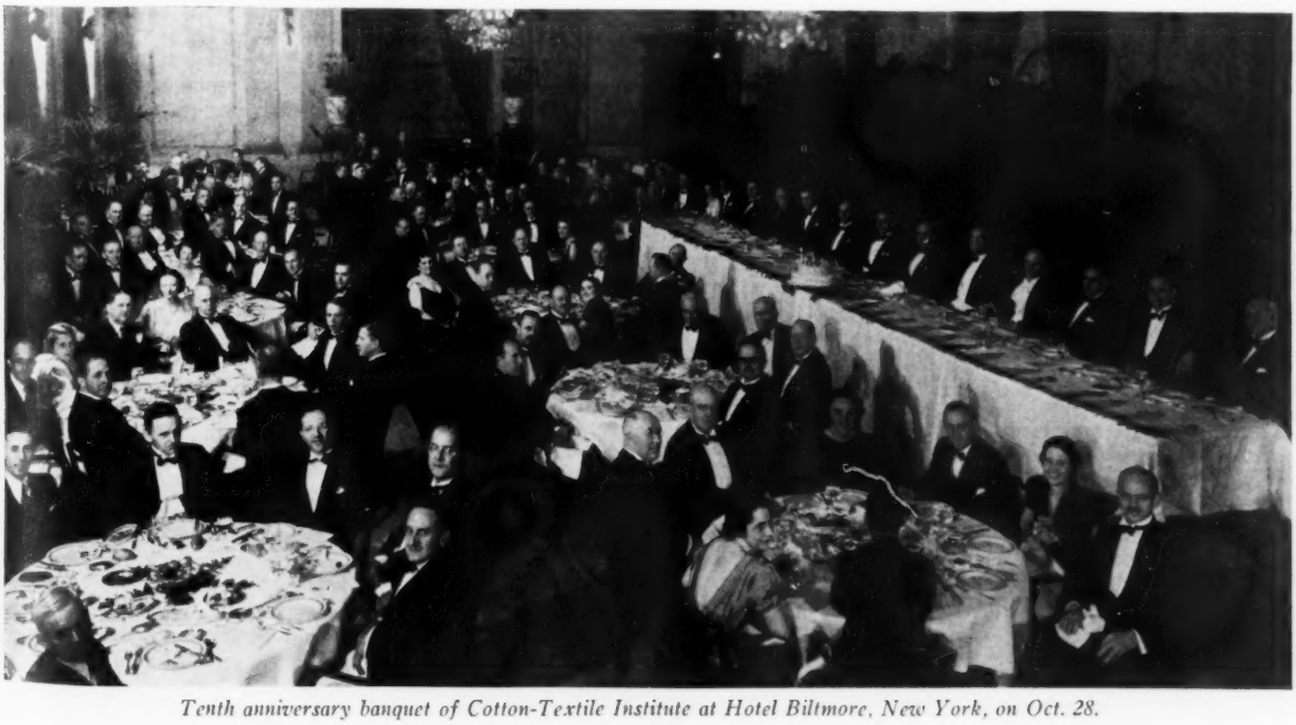
The following directors were elected at the meeting:

To serve three years: W. D. Anderson, Sr., Bibb Mfg. Co., Macon, Ga.; W. N. Banks, Grantville (Ga.) Mills; Hyman Battle, Rocky Mount (N. C.) Mills; S. M. Beattie, Piedmont Mfg. Co., Greenville, S. C.; C. F. Broughton, Wamsutta Mills, New Bedford, Mass.; W. B. Cole Hannah Pickett Mills, Rockingham, N. C.; Donald Comer, Avondale Mills, Sylacauga, Ala.; R. D. Hall, Stowe Thread Co., Belmont, N. C.; C. E. Hatch, Brandon Corp., Greenville, S. C.; W. H. Hightower, Peerless Cotton Mills, Thomaston, Ga.; Weston Howland, Gluck Mills, Boston, Mass.; W. S. Libbey, W. S. Libbey Co., Lewiston, Me.; J. F. Matheson, Mooresville (N. C.) Cotton Mills; Charles D. McDuffie, Lincoln Mills of Ala., Boston; J. A. McGregor, Utica & Mohawk Cotton Mills, Utica, N. Y.; A. F. McKissick, Alice Mfg. Co., Easley, S. C.; J. A. Miller, Exposition Cotton Mills, Atlanta, Ga.; W. S. Montgomery, Spartan Mills, Spartanburg, S. C.; A. G. Myers, Flint Mfg. Co., Gastonia, N. C.; Frank I. Neild, Neild Mfg. Co., New Bedford, Mass.; Frank E. Richmond, Highland Mills, West Warwick, R. I.; George N. Roberts, Bemis Bros. Bag Co., Boston; Scott Roberts, Adelaide Mills, Anniston, Ala.; H. H. Whitman, Tallapoosa Mills, New York; R. D. Wood, Millville Mfg. Co., Philadelphia.

The executive committee elected at the meeting is in line with the changed by-laws providing for two classes of members of the committee, as follows:

Class A group includes twelve directors, as follows: For one year: Robert Amory, Boston; J. H. Cheatham, Griffin Ga.; T. M. Marchant, Greenville, S. C.: Gerrish H. Milliken, New York. For two years: W. F. Staples, Taftville, Conn.; E. M. Phillippi, New York; F. W. Symmes, Greenville, S. C.; Harvey W. Moore, Concord, N. C. For three years: H. G. Nichols, New York; A. G. Myers. Gastonia, N. C.; K. P. Lewis, Durham, N. C.; Robert R. West, Danville, Va.

Class B members include Dr. Murchison, the president; Goldthwaite H. Dorr, chairman of the board: Frank Neild and R. E. Henry, vice-presidents; Donald Comer and Russell Fisher, presidents of the two regional associations; and the presidents of the State associations including Harvey Moore for North Carolina, S.



Tenth anniversary banquet of Cotton-Textile Institute at Hotel Biltmore, New York, on Oct. 28.

Marshall Beattie for South Carolina, W. N. Banks for Georgia, and Scott Roberts for Alabama.

Subsequently the directors re-elected the officers named above, and also re-elected Paul B. Halstead as secretary-treasurer.

Resolutions Passed

Resolutions passed at the meeting included one directing the president of the Institute to canvass cotton manufacturers with the purpose of enlisting pledges of mills to purchase their cotton solely on a net weight basis on all contracts entered into on and after Jan. 1, 1937; authorizing the president to take steps to get support of the mills for the proposal of a promotion fund formed by contribution of 1c. a bale from cotton shippers and same amount from manufacturers; and, finally, one commending and pledging support to the program of coordination developed at the meeting of association executives the previous day.

ANNIVERSARY BANQUET

PROBABLY the best way to indicate the success of the tenth anniversary banquet of the Cotton-Textile Institute held in New York Oct. 28 is to note that it lasted longer than any this reporter has ever attended (breaking up at 12:15 a.m.) and yet practically every one of the diners remained to the very end. There was an air of happiness and confidence about the occasion that has been missing all too frequently at textile meetings during the long hard years.

The toastmaster—and a better choice could not have been made—was Col. G. Edward Buxton. The speaker of the evening was W. D. Anderson, Sr.; no comment is needed on his fitness for that job.

Col. Buxton called on the "battle-scarred veterans" to sing of the 10-year battle of the Institute. Dr. Claudius T. Murchison, "the leader of today and tomorrow," said that he would receive inspiration to go forward from those who had struggled in the days of the past. George A. Sloan, leader of the Institute during its most stirring days, saluted those leaders who have passed on, calling the roll. Goldthwaite H. Dorr, the other living ex-president, and introduced as the Nestor of the group, said that the best promise for the future was the genius of this industry in discussing its differences around the table, and finally agreeing on a courageous course of action.

Robert Amory, who has served on the executive committee since the beginning, expressed the belief that the industry would go forward to still greater achievement under Dr. Murchison. Stuart W. Cramer told how, as chairman of the committee appointed to select officers at the start of the Institute, he got George Sloan and brought him out—"a promising boy," as he put it; also how the committee was unanimous in the choice of Walker D. Hines for first president.

George S. Harris, who presented the plan for the Cotton-Textile Institute at the meeting of the American Cotton Manufacturers Association in Atlanta, Ga., May, 1926, read extracts from his remarks at that meeting. Lee Rodman told how he had started in 1910 trying to get the industry aroused to the necessity of cooperative action and how he subsequently had published in TEXTILE WORLD an article outlining an organization similar to that later created as the Cotton-Textile Institute (TEXTILE WORLD, April 18, 1925, page 43).

Gerrish H. Milliken, treasurer of the Institute from its formation until recently, confined his remarks to a word of greeting. B. B. Gossett, John A. Law and Bertram Borden were unable to be present.

Col. Anderson, in the address of the evening, said that a decade in the life of an individual is not a long time but in an organization of this type it is something! He expects the roll of honor of those identified with the Institute to grow rapidly in the future since he believes the organization is just reaching its period of maximum usefulness. Referring to the days of NRA as the most interesting period he has ever experienced, Mr. Anderson said that the stars conspired "to raise up for us a leader in George Sloan" and that the industry followed Mr. Sloan's leadership as it had never followed anyone else before. Urging that the Institute extend its work in the dissemination of statistics, he said that if the Institute will address itself to merchandising problems and to the problem of excess and obsolete equipment, the next ten years will be better than those just past.

TEXTILE CYCLES AND MILL POLICIES

ONE of the outstanding contributions at the annual meeting was the paper on "Textile Cycles and Cotton Mill Policies" by Robert R. West, president of Riverside & Dan River Cotton Mills. This paper follows in part:

"To what extent may the cycles of textile activity afford a guide to the formulation and execution of cotton mill policies? Inquiry seeking to establish an answer to that question runs head-on into the speculative character of the industry.

"Cotton mill policies all too frequently are, of necessity, determined upon and executed on the basis of information which is wholly inadequate. Statistics having to do with our raw material supplies, and with the production and unfilled orders on the part of primary producers, mark the limits of our knowledge in that respect. Manufactured goods, once out of the hands of producers, disappear into distributing channels as into an obscure mist of vague estimates. The information now at the command of cotton mill managers is lopsided and fails to provide substantial grounds for policy determination.

"Actual experience is eloquent on this point. What statistics were available in 1927 and 1928, for instance, indicated an extraordinarily favorable position for the industry; margins were satisfactory, goods were moving freely; what stocks were built up in the fall of 1927 and spring of 1928 were disposed of profitably in the fall of 1928 and the spring of 1929. Yet, in retrospect it is quite apparent that this free movement of goods served to over-load distributors' shelves. There were vague warnings at the time that such was happening but no information, even remotely approaching accuracy, was available.

"Speculative elements entering into the guidance of mill operations render impotent the meaning of the statistical data now, or hither-to, available. To appreciate the grip which speculative factors have on this industry it is only necessary to review the experience of the 10 years covered by the life of the Institute.

"It can be seen from such a review that in the absence of favorable speculative factors the industry has not been able to compensate itself. In the presence of unfavorable speculative factors the industry has been subjected to terrific losses. At any rate, it is readily apparent that the speculative considerations which influence a manager are of such momentous importance, that they almost invariably over-shadow the significance of factual data which permit such a short range view as those presently available do.

"At first blush it might seem that these two characteristics—namely, operation in the face of inadequate information and domination of speculative influences, are wholly disassociated; that one has nothing to do with the other. Reflection on the subject, however, leads to the conclusion that the two are closely identified. The determination of merchandising and production policies on the basis of the inadequate information at our disposal is certainly a speculation of the first magnitude. The industry which should be characterized by considerations of knowledge and precision is at the mercy of speculative elements.

"It has become fashionable to attribute

the low estate of the cotton textile industry to over-production, or, to use the more euphemistic term, excess capacity.

"It is evident that there is no definition or demarcation of excess capacity except in relation to the movement of goods into consumers' hands. Excess capacity cannot be defined in the absence of full knowledge of such movement of goods, and any capacity is excess capacity when not controlled by that knowledge. We permit our producing and merchandising policies to be dominated by the speculative influences of potential excess capacity in existence rather than by knowledge of facts which define and might control the use of actual over-capacity.

"What concrete effect does this have on cotton mill policies? It causes fluctuations in margins wholly out of proportion to the actual circumstances involved. Mark you, I speak of margins, not prices, for it is margins on which our income is dependent. Increasing margins naturally excite sales and production of goods; decreasing margins always eventually stop sales and production of goods, but in the case of cotton textile industry, the point at which declining margins are permitted to become effective has proved to be too low in relation to the costs of production. Cotton textile producers put in their stop loss orders on merchandise at too low a figure. This accounts for the dissipation of capital which has characterized the industry in recent years.

"There is occasion to believe that the cotton textile industry may be made a safer field for investment; a more stable provider of employment, and a less hazardous venture for management than it has been for the last ten years. As a result of our inquiry two modest procedures suggest themselves as aids as accomplishing this desirable result.

Robert R. West who offered a plan to put statistics to work

"We should, in the first place, assemble periodically all of the available facts as to stocks of goods and rate of movement in the hands of our distributors to the end that such information, when supplemented by like information from the primary producers, might give us the means of making a sound appraisal of the total available supply of stock and rate of off-take of cotton textile goods. This consolidated information should be available to producers, distributors and the public alike in the same manner as our statistics regarding raw cotton.

"In the second place, cotton textile producers should raise the point of margin at which they restrict sales and production, from a point representing, as it has in the past, actual cash loss, to a point which represents at least full cost.

"Possibly, these two procedures mark the extent to which a study of textile cycles may help in the guidance of cotton mill policies. Possibly, their use might temper the effects of the speculative factors with which we have to deal in the conduct of their business."

COORDINATION CONFERENCE

THE conference of association executives seeking coordination of activities, held the day prior to the annual meeting, not only developed machinery for continuation of this type of cooperation in the future, but gave this group an excellent opportunity to discuss their mutual problems frankly, to bring grievances out into the open, and to pave the way for generally more successful prosecution of their individual jobs, as well as more orderly approach to industry-wide objectives, than has ever before been possible.

The discussion covered four major classifications of activities, as outlined by Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, in his brief introductory remarks: Maintenance of employee and machinery standards; legislative activities; public relations; promotion of cotton; and relations with non-cotton groups.

Speaking on the maintenance of code standards, W. M. McLaurine, secretary of the American Cotton Manufacturers Association, stated that during the last two months he has felt more hopeful for voluntary compliance than at any time in his 13 years connection with the industry. The mills have found that they *must* maintain such standards, he emphasized. As for the South, he said that there is a far greater degree of compliance in that section than is recognized, rumor to the contrary not withstanding.

Russell T. Fisher, president of the National Association of Cotton Manufacturers, suggested that in future approach to legislative problems, this test be applied: "How will the measure affect the worker? How will the measure affect the prosperity of the industrial community? How will it affect the stockholders?" A careful study, he stated, will reveal the answers to these three questions, and a study of opposition arguments will reveal their strength or weakness. "Then let us carry our story to those whose interest in industrial legislation is as vital as our own—the industrial worker and the industrial community," Mr. Fisher concluded.

Charles K. Everett, manager of the New Uses Section of the Cotton-Textile Institute, speaking on promotion, stated that "the regional and State associations in the cotton industry are the nuclei of an organization that can accomplish anything it sets its mind to." He dwelt particularly upon the new plan for raising a promotional fund.

Discussing the possibility of cooperation between the cotton textile industry and non-cotton groups, C. Whitney Dall, president of National Rayon Weavers Association, stated that it seemed quite feasible to set up a single plan to coordinate effort in either local or federal fields, particularly in connection with legislation. He suggested machinery similar to military organizations, a general headquarters composed of representatives of the various associations, which would work directly with brigade headquarters such as National Association of Cotton Manufacturers and American Cotton Manufacturers Association. These brigade headquarters might easily work through regimental headquarters comprised of State associations or with trade groups. "A close coordination will not result in lessened importance of any association, but may easily make it of greater value to its members," he concluded.

Those present at the conference included:

Russell T. Fisher, president, National Association of Cotton Manufacturers; Wm. M. McLaurine, secretary, American Cotton Manufacturers Association; Scott Roberts, president, Alabama Cotton Manufacturers Association; W. N. Banks, president, and T. M. Forbes, secretary, Cotton Manufacturers Association of Georgia; Harvey W. Moore, president, and Hunter Marshall, Jr., secretary, Cotton Manufacturers Association of North Carolina; S. M. Beattie, president, and W. P. Jacobs, secretary, Cotton Manufacturers Association of South Carolina; C. Whitney Dall, president, National Rayon Weavers Association; R. D. Hall, president, Fred M. Allen, secretary, and Mrs. Mildred G. Barnwell, executive assistant, Southern Combed Yarn Spinners Association; Marshall Orr, chairman, Print Cloth Group; F. Gordon Cobb, Southern Textile Association; Josef Pollack, president, and David Snyder, secretary, Cotton Thread Institute; F. H. McDevitt, Fine Cotton Goods Exchange, New Bedford, Mass.; Norman Elsas, Atlanta, Ga.; Dr. Claudius T. Murchison, Paul B. Halstead, Wm. V. Lawson, Charles K. Everett, Miss Catherine Cleveland, Lewis F. Sawyer, E. O. Fitzsimmons, R. F. Howell, all of the Cotton-Textile Institute; John K. Watson, of Hines, Rearick, Dorr & Hammond, counsel for the Institute; Douglas G. Woolf, editor, TEXTILE WORLD; Robert W. Philip, editor, *Cotton;* Harry Reimer, dry goods editor, *Daily News Record;* Prince Carlisle, New York *Journal of Commerce.*

Distribution Research

Objectives and methods of approach outlined at annual meeting of U. S. Institute

AN exposition of the objectives and method of approach to the "Survey of Production and Distribution Organization in the Textile Industry," now being conducted by the Wharton School of Commerce & Finance, featured the seventh annual meeting of the United States Institute for Textile Research, held Nov. 5, in New York. Dean Joseph T. Willits, of the Wharton School, explained the way in which the survey is to be carried out and pointed out what cooperation is expected from industry. Other high spots of the diverse program included an open conference on textile drying and on chemical processing as affected by drying, a report of recent investigations on cellulose fibers, and an address on the necessity for both fundamental and applied research if the textile industry is to continue to progress.

Dean Willits was introduced by Fessenden S. Blanchard, chairman of the Institute's committee on economic research, which organized and is administering the distribution survey. In his address the speaker stated that the main objective of the investigation, which is being financed by Textile Foundation, is to determine what general trends there are in the textile industry toward or away from vertical integration of manufacturing and sales and to find the causes of these trends. One stage of the investigation will be to appraise the experience of individual manufacturers of knit goods, household textiles, and industrial fabrics who have integrated production and sales. Dean Willits stated that there is no intent to plan industry, but rather to point out the present trends and the forces causing these trends, so that the individual manager will be in a better position to work out his own task.

At the conference on drying, John O. Ross, of Ross Engineering Co., described some recent developments in drying materials other than textiles, emphasizing the advantages of new systems which permit use of temperatures up to 1,000° F. in the initial stages of the drying operation. Following the discussion of this paper, Dr. H. D. W. Smith outlined the Institute's research program on textile drying. As now planned, the investigation will cover a study of regain of each of the textile fibers over a wide temperature range, effect of regain on fiber properties, effect of machine variables, and effect of impurities on the fibers. It is estimated that cost of the research will total $5,000 a year for two years. Financing of the project is now about half completed.

Officers re-elected were: president, Hon. Francis P. Garvan; vice-presidents, E. H. Killheffer, Alban Eavenson, Louis A. Olney, Edward R. Schwarz, Harold DeW. Smith; treasurer, Ernest N. Hood; secretary, Charles H. Clark. New directors chosen were: G. E. Hopkins, Ephraim Freedman, D. E. Douty, John Bancroft, Jr., F. S. Blanchard.

A New Viewpoint

That recent investigations have given a clearer and truer picture of cellulosic textile fibers was demonstrated vividly by an address, illustrated with lantern slides, delivered by Wanda K. Farr, of Boyce Thompson Institute. Microscopic analysis and chemical tests have shown that cotton fibers consist of minute ellipsoid cellulose particles held end to end to form fibrils, which in turn are cemented together to form the fiber. The cementing material, which constitutes not more than 3 or 4% of the fiber and which consists partially of pectic acid, can be removed with chemicals, leaving the cellulose particles apparently unharmed. These particles account for the crystalline behavior of cotton fibers; the cementing material, for their colloidal behavior. With the abilty to separate the cellulose fiber into its component parts, it is now possible to determine the effect of various reagents on each of those parts. Thus, a study of the behavior in cuprammonium hydroxide of untreated cotton, cellulosic particles from cotton, and the separated cementing material is well underway. Reactions of these components to acetylation, nitration, and xanthation are also being investigated. Already it has been shown that what was formerly held to be cellulose degradation in many cases is actually membrane degradation. Upon microscopic examination of mixtures of cotton and cuprammonium, for example, the cellulose particles are seen to be dispersed throughout the mixture.

Other problems now being studied or which it is hoped to investigate later include the effect of mercerization, the hygroscopic behavior of fibers, and the reaction of fibers to dyes. The investigations which have led to this new viewpoint of textile fibers have laid the foundations for the more detailed work which must follow.

Why Research?

Speaking on the subject, "Why Research?" Dr. Elvin H. Killheffer, E. I. du Pont de Nemours & Co., asserted that the first need is for fundamental scientific research which should be carried out cooperatively. The fundamental research accomplished, the practical man in the industry can study the results and make practical application of them in his own plant. If every textile mill contributed or was assessed 1/10 of 1% of its annual sales, approximately $2,500,000 a year would be collected, which would permit an extensive program of fundamental research. The industrialization of the Far East, according to Dr. Killheffer, constitutes a serious threat to the American textile industry; and here research and the tariff question are interwoven. Without tariffs which protect the industry against abnormally low-cost nations, a research program cannot be supported financially; without research, which will keep the industry abreast of the times, it is less easy to justify tariff protection. The only chance of lessening the dependency on tariffs is to be far in advance of the other countries in quality and production costs. If such a condition is to be brought about, it must come through revolutionary developments, which, in turn, are products of research.

"Whatsit" Fabrics Score—

Textiles designed by and for children offer moral to trade

"GO to the consumer for textile design inspiration." . . . This ancient rule, which usually is more honored in the breach than in the observance, took on a new importance in the textile industry during the current season, with the advent of the "Whatsit Fabrics." These fabrics, as the name suggests, are a line of quite unusual prints designed by children and now offered to the public in children's garments.

The name "Whatsit" originated seven years ago in a series of child stories in a national magazine, later was further popularized in a radio series. Both proved so successful that today the term is familiar to hundreds of thousands of children throughout the country. Recently, Charles D. Morris, creator of "Billy and Betty White," fictional editors of *"The Whatsit,"* a children's newspaper, held a stamp design contest among his followers.

The originality of the designs submitted suggested their possible use in textile fabrics for children's wear. Arrangements then were made by which Eugene Messner, Inc., cotton converters, of New York, were granted licenses for the manufacture of the "Whatsit Fashions" fabrics, while Schleifer-Lubell, Inc., and G. H. & E. Freydberg, Inc., manufacturers of garments for older and younger children, were given exclusive rights in their respective divisions. The merchandise was first shown to the trade last month in a "Whatsit Fashion Show" at the New Yorker Hotel, New York.

According to Eugene Messner, the innovation was immediately successful; the new merchandise was offered to 100 stores, and 97 of them accepted it. His firm now is sold out on its first line, and a second group of "Whatsit" fabrics for spring is nearly ready. The fabrics are being made up in a wide range of children's garments and the range will be further extended for spring. "Whatsit" pajamas are expected to be a highlight of the vogue in the coming season. However, the designs also have possibilities in fields not yet developed, Mr. Messner pointed out; he cited raincoats, underwear, playroom furnishings and even linoleum for the playroom floor as likely markets for the "Whatsits."

Sponsors of the idea attribute its success to the fact that the designs authentically reflect child mentality. As the accompanying illustrations show, the patterns actually printed on the fabrics differ only in execution from the original work of the children. The youngsters' ideas have been carefully carried through in the prints. The first line of fabrics comprised 15 patterns—a fantastic and fascinating conglomeration of such varied themes as bacon-and-eggs, tic-tac-toe, mother goose, quintuplets, hobby horse, vegetable shop and jacks.

Not the least important part of the story is the powerful sales background provided by the existing popularity of the "Whatsit" vogue among children. In promoting the "Whatsit" fabrics and garments, the manufacturers tie up closely with the magazine and radio following. For instance, every garment carries a tag showing a school slate, inscribed "Whatsit Fashions."

All of which prompts the thought that this idea might be adapted to getting designs for adults' wear fabrics. An enterprising converter could solicit patterns from the public in much the same way—and doubtless with equally original results. Maybe one day he will!

Daniel Pratt, Pioneer

Honored in Centennial Celebration at Prattville, Ala.

—By George H. Watson

A CENTENNIAL celebration is being held this year in Alabama for Daniel Pratt, a native of Temple, N. H., who played a big part in the penetration of the textile industry into the deep South and in cotton-gin manufacturing.

His life, as well as that of his wife, Esther Ticknor Pratt, a native of Columbia, Conn., is being honored in a series of commemorative programs at Prattville, a village which he founded twelve miles from Montgomery, where the mills which he established are still in operation. These programs will culminate Nov. 25 in a special celebration. H. O. Murfee, of Prattville, is the director.

Daniel Pratt was a real pioneer in the textile industry's advance into a strictly agricultural region. Born in 1799, young Pratt left New England, after serving an apprenticeship as a carpenter, and went by boat to Savannah, Ga., arriving with only $25 and a kit of tools. After two years in Savannah, he went to Macon and Milledgeville. In 1831, he moved to Clinton, Ga., and worked for Samuel Griswold who operated a cotton-gin factory, soon becoming a partner in the business. In 1833, the firm of Griswold & Pratt decided to establish a branch in Alabama. Griswold abandoned the enterprise, but Pratt purchased materials for 50 gins, loaded them, together with his wife and two negroes, on wagons and proceeded to Alabama. After a brief period at Montgomery's Mill where he had no trouble selling his completed gins, he bought a tract of land a few miles away where the rippling waters of Autauga Creek reminded him of his New England home. There he founded in 1836 the industrial empire and the town named for him.

Mr. Pratt erected in succession a saw mill, a planing mill, a flour mill and a gin plant. His gin business prospered, and his name and product came to be known wherever cotton was grown. For a period of some 34 years Pratt operated the gin plant, turning out an average of 500 gins a year and sometimes as many as 1,500. It is still in operation as one of the plants of Continental System.

Monument to Daniel and Esther Pratt in Prattville Cemetery.

In 1846, Mr. Pratt established Prattville Mfg. Co. which came to be one of the leading textile firms in the South. Products were osnaburgs, sheetings, shirtings and rope. Because of prejudice against Southern textile products at first, Mr. Pratt shipped some of his cloth North and then had it shipped back to Montgomery. He was amused at its acceptance.

A history of the mill, still in operation, was given to TEXTILE WORLD by Daniel Pratt, III, now retired and living in Prattville, as follows:

"The cotton mill was established in 1846 as a corporation then known as Prattville Mfg. Co. No. 1. After numerous changes in ownership, it was finally controlled by H. E. and J. Faber, who owned it when it was partly destroyed by the disastrous flood of April 1, 1886.

"In 1887, the remains of the old mill were bought at a bankrupt sale by a new corporation, which rebuilt it as Prattville Cotton Mills. This corporation was owned by E. Pratt, W. T. Northington, W. L. Ellis, C. S. G. Doster, D. M. Snow, B. L. Holt and Daniel Pratt.

"When the Louisville & Nashville Railroad was put through to Prattville, the second unit of the present mill was built and the name of the company changed to Prattville Cotton Mills & Banking Co. This company later went bankrupt and was purchased by B. L. Holt and associates. Again meeting financial trouble, the mill was bought in by a new corporation, Clark-Pratt Cotton Mill Co.

"After a few years of successful operation, Clark-Pratt sold out to Hesslein & Co., of New York. This concern added a dye plant, and reorganized the company as Bradford Cotton Mills, under which name and ownership the mill runs today."

While opposed to secession, Mr. Pratt sided with the South in the Civil War. During the first years of the war, his profits were high but in the end he lost heavily. His mills closed down and he was unable to collect some $150,000 in claims. However, he eventually recouped his fortunes. He died in 1873 aged 74 years.

During his lifetime, Mr. Pratt became known as a liberal patron of the arts and sciences. The final objectives of the Prattville Centennial Commission are to establish and endow at Prattville a Daniel Pratt Public Library, an Esther Pratt Welfare Center and a Pratt Vocational High School.

Daniel Pratt's gin manufacturing plant, built by him at Prattville, Ala., as it appeared before the Civil War. Bradford Cotton Mills of today had its beginning in one of these buildings.

Twenty-One Meetings

Held by D-13's subcommittees at three-day fall session

THE more arduous and far-flung the activities of Committee D-13 become, the greater grows the attendance at its meetings. At the regular fall assembly of this indefatigable offspring of the American Society for Testing Materials, held at the Hotel New Yorker, New York, Oct. 14, 15, and 16, the registration reached 104, breaking all records. The impressive list of activities included a papers session, a banquet, two general sessions, and 21 subcommittee meetings.

While it is difficult to single out any one event as having been the most interesting or important, the textile industry in general is most immediately affected by the formal issuing of the 1936 edition of the book "A.S.T.M Standards on Textile Materials." The new issue contains 42 standards established by D-13 on various types of cotton, wool, silk, and rayon materials.

For a development which holds the greatest promise for the future we would select the announcement made by A. M. Tenney, chairman of the subcommittee on rayon, that his group has voted to begin work on the development of standards for rayon staple.

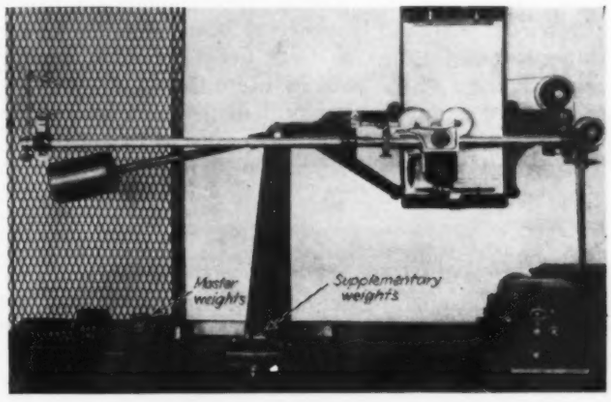
Most indicative of recent progress was of course the voting to letter ballot of certain recommendations made by subcommittees, an important step in the establishment of any new or revised D-13 standards. These recommendations included combining the three tire-fabric (other than cord) standards into one, this to conform more closely to the general standard on woven fabrics; a detailed revision of the tentative standard on test methods and tolerances for rayon; the inclusion of a sulphuric acid test among those for fiber mixtures; the inclusion of methods of test for yarn twist and bow in the general woven-fabrics standard; a restriction on the use of the ravel test in the same standard; a new test for the flatness, smoothness, and evenness of tensile-tester jaws (involving the use of a white paper placed between carbons); and simplification of the tests for cotton length, strength, and maturity.

Of most interest to the consumer, and marking a milestone in the history of D-13, was the first progress report offered by the new subcommittee on household and garment fabrics, headed by Miss Ruth O'Brien, of the U. S. Bureau of Home Economics. The first activity on which this group is embarking is the establishing of a standard classification and nomenclature for towelings and sheetings.

The papers session, held on Oct. 15, under the general chairmanship of Dean Harvey, was divided into two parts. The first part, presided over by A. M. Tenney, was devoted to rayon matters.

The opening paper, by A. Stuart Hunter, of Du Pont Rayon, discussed the application of graduated weights to the incline-plane serigraph to insure uniformity in the constant rate of loading for different deniers of yarn on single-strand tests. Dr. Hunter explained that rayons acquire a greatly increased strength under sudden stresses. He pointed out, however, that this is a valuable property not generally recognized.

The second paper of the rayon section was by Ephraim Freedman, of R. H. Macy & Co., New York, who reported the results of a questionnaire addressed to school and college students and to retail-store customers. In general the replies received indicated an abysmal ignorance concerning the raw materials from which rayon is made and certain other elementary details of the technology of rayon manufacture; and they disclosed some prejudice against rayon garments. Mr. Freedman drew the conclusion that manufacturers, distributors, and schools should undertake the education of consumers and develop a simple terminology.



Incline-plane serigraph weighted for testing a single strand of 178-denier rayon—

In discussing this machine at the D-13 meeting, Dr. A. Stuart Hunter declared that the higher machine capacities give higher strength readings due to the higher speeds at which the breaking points are reached. "The remedy indicated," he said, "was to adjust the machine capacity to the denier of any given sample so that as the result of a common rate of loading per denier per unit of time, yarns which were physically the same would break in the same time period, irrespective of their size. In terms of rayon and this instrument, it would mean the selection of a rate of loading of x grams per denier per minute. Fortunately, the construction of the incline-plane tester allows one to change its capacity simply by altering the mass of the carriage. . . . Specifically, we have found that a rate of ¼ grams per denier per minute constitutes a rate of loading which minimizes machine influences and gives a stress-strain curve of such a shape that the yield points of a yarn may be reasonably estimated." In order that the number of weights required for this adjustment may be conveniently low and yet will allow for yarns which vary slightly from standard, the Henry L. Scott Co., which holds patents on this adjustment, has arranged for the use of a few master weights suitable for yarns 5 deniers below the common deniers and has supplemented these with a series of small weights which may be hung on the master weights to bring their totals to the exact deniers of the yarns being tested. Thus in the accompanying photograph a rayon yarn found to be 178-denier has been given the master weight for 170-denier plus weights for 1, 2, and 5 deniers.

The final rayon paper was on the "Stereo-radiography of Textiles," by H. F. Sherwood, of Tennessee Eastman Corp. Mr. Sherwood described the use of the soft x-ray in the taking of stereoscopic photographs of fabrics. At present it is necessary to enlarge the photographs and insert them in a large stereoscope for examination; but Bausch & Lomb, he said, is now developing a small microscope-type stereoscope which will eliminate the need for the enlargement. The great advantage of this new aid to fabric examination, he explained, is its ability to disclose the interior of the fabric in third dimension so as to show the relation of one

yarn to another throughout the thickness of the cloth.

The second part of the papers session was devoted to statistical methods for the control of quality and was presided over by A. G. Ashcroft, chairman of the Subcommittee on Sampling, Presentation and Interpretation of Data. While less interesting to the layman, this subject was found of vital interest and importance to all members of D-13.

The principal address of this section was made by Dean Harvey, of Westinghouse, who used the testing of the transverse strength of bricks as a simple example of quality control by statistical methods. He explained, for example, how it is possible to determine the number of bricks that should be tested to insure that the average value obtained from the tests does not vary from the actual average of the total by more than 2%. Instances of the application of statistical methods to specific textile problems were offered by J. N. Dow, of Bigelow-Sanford; A. G. Scroggie, of Du Pont; O. P. Beckwith, of Alexander-Smith; and L. R. Jones, of Mohawk Carpet.

Chemistry Shows Spinnability

As usual, some of the subcommittee meetings were featured by important discussions and addresses. At the cotton meeting, for example, C. M. Conrad, government cotton technologist, discussed the application of chemical methods to the determination of quality of raw cotton. He cited instances to show that certain classifications of cotton on a chemical basis serve to rate the spinnability of the cotton, and he declared that the fluidity of raw cotton in cuprammonium solution gives a clue to the strength of the fiber and of the yarn made from it. The chemical technique simplifies the sampling problem, as fibers which are difficult to mix properly for averaging in their original form are readily mixed in a powdered condition.

At the rayon fabrics meeting C. L. Simon, of Industrial By-Products & Research, discussed the desirability of tests for fabrics in men's and women's apparel to indicate degree of wrinkling, stretching, bulging, and water-spotting, particularly in connection with spun rayon. The same meeting contained a discussion prepared by H. A. Mereness, now of the U. S. Dept. of Labor, on the testing of shrinkage of fabrics in home laundering and the correlation of slippage tests between incline-plane and pendulum machines.

At the wool meeting Alfred Suter reported progress on the development of a new fiber-length sorter for wool.

In the methods session Dr. W. von Bergen discussed the use of the microscope in the quantitative analysis of fiber mixtures.

Ephraim Freedman, who was chairman of the program committee, was also toastmaster at the banquet Thursday evening. He called first on H. J. Ball, chairman of D-13; on C. H. Eames, president of Lowell Textile Institute; and on H. H. Willis, dean of the Clemson College. The principal address was by Dr. Harry S. Rogers, president of Polytechnic Institute, Brooklyn, N. Y., who discussed the functional relationship of research to industry.

Announcements by Chairman Ball included the appointment of A. R. Howe, of Ludlow Mfg. & Sales Co., as chairman of the Subcommittee on Bast Fibers and Their Products, and of F. S. Mapes, of General Electric, as chairman of the Subcommittee on Asbestos and Its Textile Products.

UNIFORM

By Walter A. Simond

WHEN MR. SIMOND started developing the principles upon which he has based this series of three articles (the first two of which appeared in August and September issues), he had in mind only the routine alignment of full-fashioned machines. Last March there was an unexpected problem. He writes: "The water rose to 6 ft. 3 in. on the floor of our main full-fashioned mill and the machines were completely submerged. After the flood, although our No. 3 mill is of heavy concrete-and-brick construction, it was necessary to do quite a little realigning of our machines. I found the fixture for the dial gage described in the article very helpful, detecting errors as high as 0.05 in."

OBVIOUSLY, the essential element in the production of fine hosiery is absolute uniformity of stitch. Because of the necessity for rapid regulation and variation of the stitch when the yarns are changed in the construction of the stockings, it is possible to have only one cam, or at the most two, for this important duty. The wear upon the single cams and stitch units is so great that it has been found necessary to install two units on long machines. On one of the leading machines, the stitch units are connected by a rod and rack gears to enable the knitter to shift both units with a single lever. Whether the units are connected or not, they must be set alike and should be kept in the best of condition.

At present the stitch units are set as nearly alike as possible by running on to the slack-course cam just far enough to relieve the pressure on the stitch-cam rollers and then turning these rollers by hand to make certain that they are under equal pressure. A better way is to separate the rollers from their cams, insert a feeler-gage blade, and adjust one unit to the other. Here the horizontal dial-gage measurement between the top table and the back of the needles affords a more accurate adjustment of the two stitch units.

Height of Gage Foot Constant

Tests of all stitch-regulating units should be made at the same height of the dial-gage foot, just safely clearing the top of the sinker banks. This position can be obtained quickly by the use of a collar on the upright of the horizontal adjusting slide. Thus all records are reliable and may be safely used when errors are corrected or styles of work are changed. The first test should be for wear on the knitting portion of the stitch cams. When this test is made the dial-gage pointer should remain stationary while the sinkers are being drawn as the machine is turned by hand. The other test is to determine whether the distance from the top table has changed. If so, the error may be corrected by turning one of the stitch star screws a nick or more as needed.

The slacker handles and stitch screws are subject to considerable wear. The handles of the cam type wear

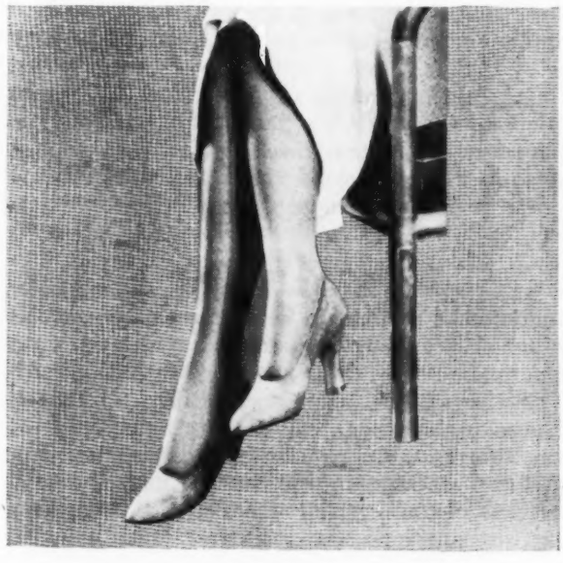
STITCHES

Depend on proper alignment of stitch units, rockers, etc., on full-fashioned machines

particularly fast where they come in contact with the ends of the stitch screws. The movement of these handles determines the length of stitch when it is varied for welts, heels, or toes. The horizontal dial-gage will be found very useful in determining the amount of wear in the handles, etc., when the stops are being set. The object is to obtain welts of uniform elasticity, and heels and toes of uniform length, from all the machines on any one style, and to permit a better duplication of any style when needed. From the dial-gage reading a simple record can be made for each style showing the exact movement of the needles when the slacker is moved. These gages can be had reading to ten thousandths of an inch if desired, but doubtless one thousandths is sufficiently fine, since the calibration is large enough to permit safe estimates of quarter thousandths of an inch if desired.

Rocker Unison and Depth

With the advent of the pointed heel and cradle foot, with a variation in the width of the splicing or split suture as the knitting progresses, it has become necessary to use quite complicated mechanisms to rock the needles while drawing yarn. While these mechanisms are not in action all of the time, as are the main stitch units, they should be set alike. Instead of feeling for pressure on the rocker-cam rollers—which are usually quite slippery with oil—, it is better to set the horizontal dial-gage against the back of the needles and watch the pointer while turning the machine by hand. The pointer indicates just where the rocking action begins and ends and, what is more important, the exact distance the needles move, so that the slightest difference in the units may be quickly corrected. It is also possible to determine whether the wing cams in each unit are alike. If the needle movement in one machine is found to be 0.02 in., any number of machines can be set to that distance at any time. It is doubtful whether both rocker units are set alike by present methods on any one machine, to say nothing about two machines. Records of the needle movements in the various machines should be kept.



When the slack-course cams have had considerable use, it is well to test the working surface of the cams with the horizontal dial gage against the needles as for the other stitch-motion tests. Also a record may be kept of the distance the needles move when making a slack course—preferably as compared with the body-stitch position. Such a record will be found very helpful when styles are changed, especially with the automatic slack-course setting, where it is so important to have just the right length of stitch for the picot courses, and in setting a number of machines so all the stockings of a style will have the same-size picot.

Narrowing-Machine Alignment

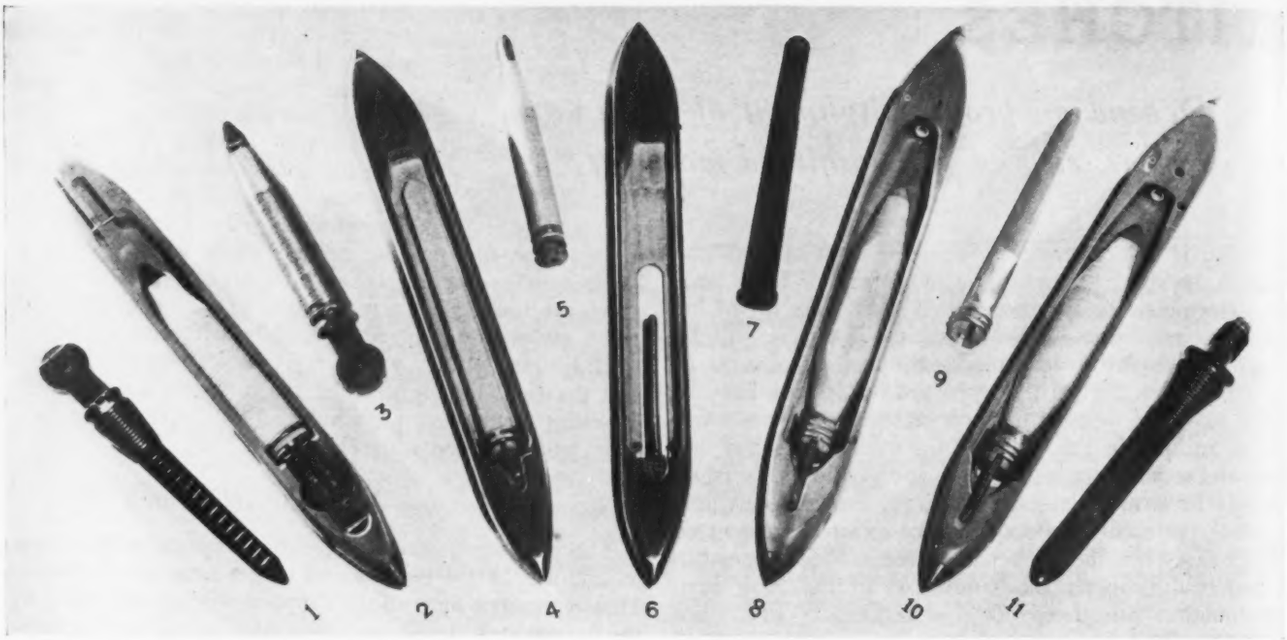
The narrowing machine does not require such a close adjustment as the needles and other elements discussed. However, since most of the dropped stitches are found in the narrowings, it will be profitable to adjust the narrowing machine carefully in order that there may be very few stitches dropped. For height the fixed gage now used is sufficiently accurate, as is also the curved gage used for the distance between the back and top shafts of the narrowing machine, although it is a feeler gage. There was a time, before many of the modern improvements were applied to the machines, when doubtless the distance gage used between the back shaft and the lower bar of the narrowing machine gave good results; but not now. On several new machines which were very carefully erected recently, the horizontal distance from the top table rail to the lower narrowing-machine bar was found to be not less than 0.015 in. in error, and on some machines it was considerably more. These errors were found opposite the pointed-heel and other attachments where it was impossible to get the regular gage on properly.

Certainly the narrowing bars would move more freely if they were straight.

What is of greater importance, when the bars are not straight, some of the narrowing leads must be fitted at a wrong angle to bring the bottom of the narrowing points to the standard gage, which always measures from the top table rail. The use of the horizontal dial gage makes it possible to set the lower bar of the narrowing machine straight, after which the narrowing leads may be correctly fitted.

The standard fixed gage for the narrowing points touches the points. Where the horizontal dial gage is used, it would be better to set the foot of the gage just above the curve of the points, because the knitters are not able to preserve an absolute uniformity in the curves. Only one lead need be set by the fixed gage, after which all others can be more accurately aligned with the dial gage. This also applies to picot bar and other narrowing attachments.

Instead of depending upon the sense of feeling, which varies with the fatigue of the machine erector or fixer as he proceeds with the work, it is better to rely upon a dial gage which may be quickly adjusted to any position of the machine for both vertical and horizontal measurements and alignments. The dial can be used not only to check errors in motion caused by wear, but also to determine easily the location of accidental misplacement or displacement of parts and series cams.



1. *Ruti Bakelite quill with yarn surface 6 in. long and capable of holding twice as much yarn as the common round quill of same length shown as item No. 5. Where looms will permit shuttles and quills of sufficient length, this capacity can be doubled again. Shaft of quill is 5/8 in. wide and 1/8 in. thick.*

2. *Ruti spindleless shuttle with holeless quill. Round, disk-like base of quill fits round hole in shuttle, and spring clamp snaps down to hold quill rigid.*

3. *Another view of Ruti quill. Yarn package measures 1 5/32 in. wide and 3/4 in. thick.*

4. *U S flat bobbin and shuttle. Slot in bobbin fits tongue at base of short spindle to hold quill horizontal, and grooved bobbin-changing-type springs grip rings on bobbin. Bobbins may be dogwood, fiber-clad, etc.*

5. *Common type of round quill, the goat of the whole movement.*

6. *U S shuttle with short spindle and one pin at base to hold bobbin horizontal.*

7. *U S flat bobbin for short-spindle, one-pin shuttle shown at left. Bobbin measures 8 1/8 in. long over all, 3/4 in. wide, and 1/2 in. thick near head, tapering to 1/8 in.*

8. *Silk City flat quill in large Shambow shuttle. Rings on quill slip into shuttle clip of type used in automatic bobbin-changing shuttles. In addition there is a short, strong spindle equipped with leveling screw. Slot at base of quill fits tongue at base of spindle to insure horizontal position of quill. Back shuttle wall higher than front.*

9. *Silk City ring-type flat quill, metal-coated for electric feeler. Quill is dogwood, Duco finished, and measures 7 3/4 in. long over all, 3/4 in. wide under head, and 3/8 in. thick, tapering off to 1/8 in. at tip. Full quill for shuttle at left measures 1 7/8 in. wide, 1 1/4 in. thick, and 6 3/4 in. long on the 7 3/4-in. shaft. It holds 4,000 yd. of 150-den. rayon crepe.*

10. *Small Shambow shuttle for fine rayon and silk weaves, with Silk City quill holding 2,500 yd. of 15-den. rayon crepe.*

11. *Ruti varnished wood quill with slots for mechanical feelers and specially shaped rings to permit its use in automatic quill-changing looms. It is also bored for insertion on a short winding spindle.*

THE FLAT QUILL

Introduced to this country from Switzerland to increase rayon and silk shuttle capacity.

ONE Ernst Egli, working in a loom shop close by the Lake of Zurich, in Switzerland, asked, "Do quills have to be round?" A round quill, he reasoned, takes up as much space vertically as it does horizontally, and yet in the warp shed there is more space horizontally than vertically. Wouldn't a flat quill permit either a smaller shed or more yarn on the quill in the same shed?

He soon found that the answer to the first question was "No," and that the answer to the second question was, "Yes." His inquisitiveness quickly bore fruit, and today the flat quill is in commercial use in every major European country. It is standard equipment for all new rayon and silk looms being built in the plant of Maschinenfabrik Ruti, Ruti, Switzerland, where Ernst Egli conceived his invention.

The Ruti concern had the flat bobbin in successful operation by 1933. Its first American patent, 1,968,132, on the non-automatic or shuttle-changing quill, was granted in 1934. The second patent 2,027,769, on the quill-changing automatic type, was granted this year. The quills and shuttles are now offered by Ruti's New York representative, Alfred Suter, 200 Fifth Ave.

American bobbin and shuttle manufacturers are likewise showing an interest in the new development; and flat quills and the shuttles to take them are being produced by U S Bobbin & Shuttle Co., Manchester, N. H.; Silk City Metals Coating Co., Paterson, N. J.; Pavia Shuttle Co., Allentown, Pa.; and Shambow Shuttle Co., Woonsocket, R. I. The Universal Winding Co., Boston, has adapted its No. 90 winder to flat quilling, and several American mills are already trying out the new system.

Advantages in Weaving

A number of advantages have been established. Since a flat quill can in many cases hold twice as much material as a normal round quill of the same length, it can run twice as long in the loom, permitting the weaver to tend more machines—20 to 30% more, according to some reports. For example, low-twist 100-denier rayon wound on a Ruti 6-in. flat quill will run 21½ min. in the loom. This means, of course, that in the case of a common crepe, where two shuttles alternate regularly, each quill will run

43 to 45 min. Where it is possible to build up the yarn on the quill to a diameter greater than that of the head of the quill, the running time can be increased to 25 or 30 min. for single shuttles or to 50 or 60 min. for double shuttles. Similarly, a performance report on Silk City equipment showed flat 7¾-in. quills running 55 min. on crepe woven at 140 picks per minute.

The flat quill not only simplifies the work of the weaver, but also reduces by some 50% the opportunities for starting or joining marks to be formed in the fabric. Furthermore, the tendency of the yarn to balloon excessively as it leaves the quill is broken up by the ever-changing shape of the quill surface, and this helps to prevent sloughing-off.

In spite of the fact that the new shuttles, with their flat quills, weigh some 20% more than the shuttles and quills they replace, the distribution of the weight over a broader base renders the pressure per unit of warp area less than formerly, with the result that there is less friction on the warp. The wider and heavier shuttles are also said to run truer and to be less inclined to fly out of the shed.

Advantages in Winding

Where the speed of quill winders requires no change, the flat quill will increase production and reduce the number of spindles needed, because its larger circumference will draw more yarn at each revolution. In any case, however, doffing frequency is reduced and the winder girl can handle more spindles—in some cases, twice the normal. The number of quills required is also reduced, and there is less transportation of quills between winder and loom. A bunch can be built on a flat quill as easily as on a round quill.

All of the advantages mentioned thus far apply in full to non-automatic weaving. Most of them apply to automatic weaving, but unfortunately the advantage of greatest importance—the increase in looms per weaver—does not so apply.

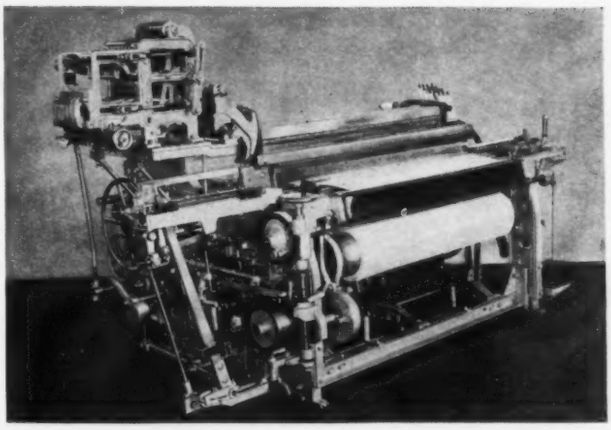
Only one group of the advantages listed up to this point applies to the use of a quill of the same capacity as a round quill. This is the group related to the increased width of the shuttle—that is, reduced friction on warp, truer running of shuttle, and reduced flying out. The only other benefits that can be looked for in the adoption of the same-capacity quill are such as accrue from a reduction of some 20 to 30% in the size of the shed. These lie mainly in the elimination of one source of injury to the warp and in the consequent improvement of fabric quality.

Changes Necessary for New System

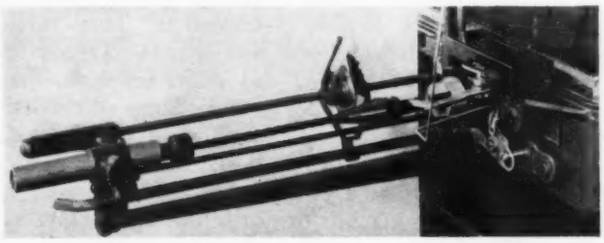
Naturally, the adoption of the new system calls for more than just the purchase of new quills and shuttles. In some cases, for example, the new quills are designed without holes and the winders have to be equipped with a specially shaped chuck for holding the base and with the so-called bobbin-support attachment, which holds the tip of the quill by means of a rotatable rubber contact point. Where the quills have short holes, short spindles may be employed, but usually in conjunction with the bobbin support. Obviously, the traverse wheel on the winder does not contact the yarn on the flat quill continuously; but, since its momentum is sufficient to keep it turning during the short intervals when it is free of the quill, no trouble is experienced from this source.

The looms, of course, require wider boxes and, in the case of automatics, wider magazines. The race plate is usually wide enough. Longer protection daggers are needed to keep the wider shuttles out of the fell of the cloth. In some cases it may be found necessary to increase the throw of the crankshaft and/or the speed of the shuttle. It is conceivable, also, that in some instances it will be necessary to raise the center stop motion so that it will clear the shuttle adequately.

Silk City estimates the cost of changing a mill over to the flat-quill system—including new quills, shuttles, pickers, quill boards, and alterations on quiller and 2x1 loom—to be $32 per loom. In the case of the small shuttle its estimate is $23 per loom.



RUTI LOOM designed to take the flat quill as standard equipment. J. J. Reutlinger, of New York, who recently inspected this loom in Switzerland, says that the low construction reduces vibration; facilitates supervision; and, plus the elimination of the arch, improves lighting conditions in the weave shed.



UNIVERSAL No. 90 filling winder equipped with special clip and bobbin-support attachment to hold the Ruti holeless, Bakelite, flat quill. A rubber contact point in the attachment presses against the tip of the quill and revolves with it. Note metal insert in quill for contact with electric or mechanical feeler of loom.

Bobbin-Changers Greatest Problem

Bobbin-changers present the greatest problem, as the magazines have to be designed to insert the quills horizontally. However, the accuracy of the insertion need not be so precise as one might excusably assume. For example, the Ruti quill for quill-changing looms has its rings so shaped that it will, under reasonable circumstances, find its correct position in the clip of the shuttle. In other words, where the diameter of the quill shaft is greatest, the diameter of the rings is smallest; and since the two springs of the quill holder in the shuttle tend to push together as closely as possible, they turn the rings to their smallest diameter.

The new development is producing its full quota of skeptics. However, Ernst Egli—like Columbus, who said the earth need not be flat—has proved to the satisfaction of many that the filling quill need not be round, thereby blasting a textile tradition.

Calculating a machinery organization for

PRINT-CLOTH YARN

By Gilbert R. Merrill
Lowell Textile Institute

This is the seventh article of a series on calculating the drafts, doublings, sizes, speeds, wastes, spindles, and other details of cotton-yarn organizations.

"PRINT CLOTH" is a general term applied to a number of constructions. The cloth is often printed but is also dyed in solid colors and given a variety of finishes. Trade journals list as many as twenty gray fabrics of this classification. They range from 27 to 44 in. in width and from 56x44 to 80x88 in construction. On the basis of 38½ to 39 in. wide, they vary from 4.00 to 8.20 yd. per pound. Some of the listings are the same construction in different widths; e.g., a 31½-in., 48x48, 8.70-yd. cloth is the same as a 36-in., 7.75; a 38½-in., 7.15; or a 44-in., 6.40.

For a great many years, a print cloth of the 64x60 construction, 27 in. wide, weighing 7.60 yd. per pound, of yarns about 28s warp and 36s filling was called a standard print cloth. In recent years, the same construction in 38½-in. width is one of the very common fabrics. (This same construction is woven 28 in., 7.30; 32 in., 6.00; and 36 in., 5.75.) The counts of yarn vary some from 28s and 36s, but these approximate the average counts used.

It seems very likely that this particular construction grew out of the natural limitations of the cotton used for the fabric. Ordinary inch cotton may be spun to counts up to 40s, but the yarn is likely to be both uneven and weak. Somewhere in the vicinity of 28s was probably found to be the finest warp yarn which could be spun and maintained at a reasonable strength. For the filling, strength was less important; and so the cotton could be spun up to 36s and produce commercially acceptable uniformity.

The cottons used range from 1 to 1 1/16 in. in grades ranging from strict low middling to strict middling.

Three roving operations are used with regular draft. Some mills use single roving in spinning, but the great majority use double roving.

Much of this cloth is produced in large mills, where volume is such that there is little handicap in keeping some rooms for warp exclusively, while others make only filling. This organization is illustrated here, however, on the basis of a smaller mill, where there is considerable advantage in carrying the warp and filling stock through the same organization as far as possible. The present problem is one using the same cotton for warp and filling treated exactly the same through opening, picking, carding, and drawing and then divided in the roving processes to permit proportional drafts in each lot of stock.

In a study made several years ago, the data at right were collected with respect to the manufacture of print-cloth warp yarns. The figures in the first three columns of the table were supplied by the mills making the yarns, while the figures in the other columns were determined from yarn samples tested under standard conditions.

A study of the table will show that 1-in. cotton was most commonly used and that middling grade was the average. Fifty-grain sliver approximated the average at the cards, and 5.35-hank was the average roving. Notice that the ninth line shows 3.90-hank fine roving, indicating that this one mill used single roving. For double roving the hanks ranged from 4.60 to 6.30, requiring drafts from about 10.0 to 13.8. The average hank for double roving was 5.47, and the average draft was about 11.6.

The following organization represents the practice of one mill and is used as an example because it comes so near to the average conditions shown in the table:

Double roving in spinning. Three roving operations. Contractions 7% for warp, 5% for filling. Two drawing processes.

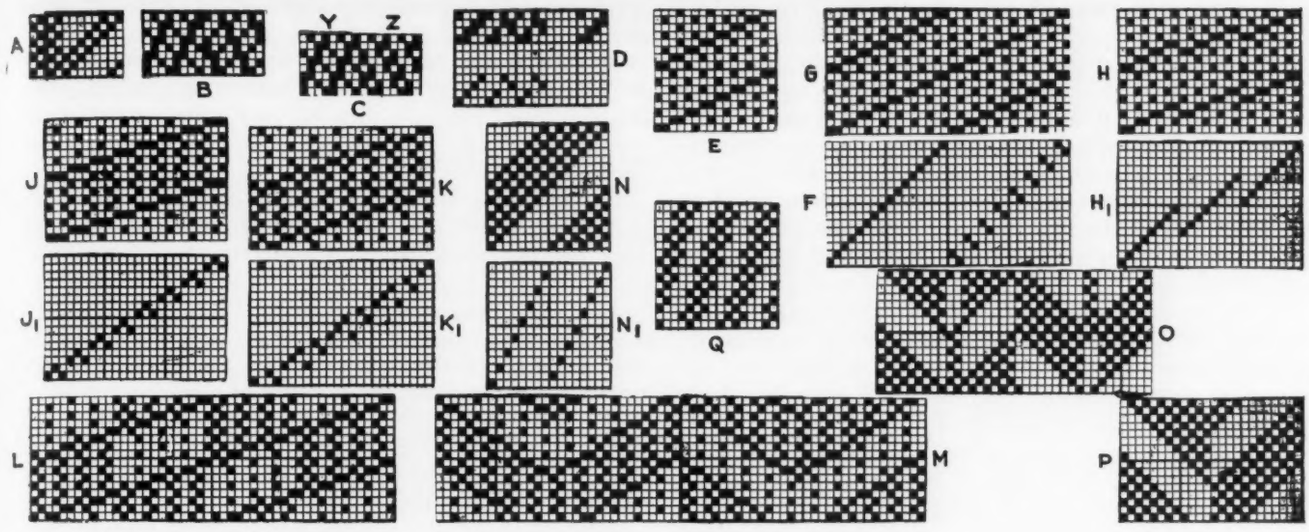
	Warp	Filling
Contraction	.93)30.00	.95)36.00
Spinning draft	11.52)32.26	11.31)37.90 at front roll.
	2.80	3.35
	x 2	x 2
Fine draft	6.20) 5.60	6.70) 6.70-hank fine roving.
	.90	1.00
	x 2	x 2
Intermed. draft	5.14) 1.80	5.70) 2.00-hank intermed. roving
	.35	.35
	x 2	x 2
Slubber draft	4.20) .70-hank slubber roving.	
	.167 or	
	50-grain second-drawing sliver.	
2nd drawing draft	x 6	
2nd drawing doublings	6) 300	
	50-grain first-drawing sliver	
1st drawing draft	x 6	
1st drawing doublings	6) 300	
	50-grain card sliver.	
Card draft	x 100	
Card waste 5%	.95) 5000	
	437.5) 5263	
	12.03-oz. picker lap.	

Horizontal opener
Vertical opener
Buckley opener
Bale breaker

Print-Cloth Warp Yarns

Grade and Staple	Grain Card Silver	Hank Fine Roving	Yarn No.	Twist per Inch	Pounds Strength Skeins	Skein Strength Constant
1" Mid	48	5.85	28.88	26.76	50.61	1462
1"+ Mid	45	5.35	27.37	24.62	65.54	1794
1"+ SLM	65	5.43	29.68	25.63	55.85	1658
1"+ SLM	60	4.60	29.39	25.41	60.38	1775
1"— Mid	50	5.80	29.64	25.34	49.24	1461
1" Mid	46	6.30	30.29	26.38	50.17	1520
1" SM	40	5.75	29.84	25.80	52.49	1566
1" Mid	55	5.50	28.37	25.35	57.05	1619
1"+ Mid	54	3.90	27.83	25.08	62.71	1745
1" Mid	43	5.50	29.10	27.53	55.30	1609
1" SM	50	5.65	29.81	25.72	47.76	1424
1"+ SLM	60	4.60	29.95	26.47	54.65	1637
1" SLM+M	50	5.25	30.20	26.87	54.42	1643
Averages	51.2	5.35	29.26	25.92	55.09	1609

$25.92 \div \sqrt{29.26} = 25.92 \div 5.41 = 4.79$ twist multiplier.
4.79 multiplier gives 7.8% contraction.
$29.26 \div .922 = 31.73$ average counts at the front roll.
$31.73 \div 5.35/2 = 11.86$ spinning draft.



STRIPES IN THE WEAVE

How they can be made artistic, bold, and distinctive in a wide range

By A. Johnson

STRIPES in the weave can be made by the following methods: (1) using a design of two weaves with a straight draft; (2) enlarging method 1 by repeating each weave with drafting; (3) using one weave with reverse and straight drafting; (4) using one weave face and back; (5) using one complete weave with a straight draft for one stripe and an entirely different weave obtained by drafting for the other stripe; and (6) using an incomplete weave for pegging plan and contrasting stripes made by drafting.

An example of the simplest type of woven stripe is shown at *A*. This illustrates the full design and also the chain for a straight draft on twelve harnesses. The first four ends weave plain, and the remaining eight are in simple twill order. It is obvious, owing to the limited number of ends in the repeat, that the stripes can be only very narrow, even on the coarser types of cloth.

In order to make wider stripes of the weaves incorporated in *A* we must resort to drafting, and the first group of four harnesses or the second group of eight may be repeated at will.

If a cloth with a uniform and level surface is required, the number of interlacings of each end in both stripes must be the same. The designs used must therefore be carefully chosen and regard paid to length of float.

One type of perfect weave combination comes under the third method, and an example is shown at *B*. The first eight ends constitute the chain, which with a straight draft forms one stripe and with a reversed order of drafting forms the companion stripe. By this means we are bound to have the same number of warp floats in each stripe and preserve a level face appearance.

A further example on the foregoing lines is illustrated at *C* and forms one of the fourth group. It will be noticed that the interlacings of each end of the first section of eight are duplicated in the second section, except that marks indicate warp floats in the former group and filling floats in the latter. In reality stripe *Y* is the back effect of stripe *Z* and illustrates another method of obtaining even interlacings of warp and filling. This basis is used extensively in damask designing.

The fifth method is an elaboration of method 2 and requires one complete weave drawn in straight for one stripe and drawn in fancy for the other. Contrast is obtained by drafting the latter in fancy-twill, sateen, or other systematical order. An example is shown at *D* with draft and chain complete.

There is a further method of constructing these styles, where an incomplete weave is used for a chain and ends are carefully drafted to provide a variety of weaves in distinct stripes. This method is specially suited to patterns in which a great number of weaves are required for the various sections. A specimen chain is shown at *E*, and progressive stages for the development of weaves based on it (along the lines already suggested) will be illustrated in the following.

One of the first points to notice about this weave is that the sixteenth and first ends do not follow as a true repeat but form a fault in the ground weave if the design is woven with a straight draft. Therefore this weave must be drafted to form a perfectly regular twill, and *F* and *G* illustrate the necessary draft and the resultant design. The cloth has a plain-weave appearance on the face broken by a fine line of twill running upward from left to right. The back has ends floating over seven picks, giving a soft handle to the cloth while preserving a clean-looking face.

For the opposite twill the draft *F* must be completely reversed. It is then useful in herringbone stripes.

Many smart patterns are made by the alternate use of stripes which differ in the angles of their twills. To carry out this idea, we could use design *G* for one stripe and, from the same chain, construct a weave steeper or flatter in twill. A portion of such a weave is shown at *H*, with the draft at *H1*. The ends are divided into groups of eight; and in order to flatten the twill, each group drops back a step in its forward movement without impairing continuity of the ground weave. (*Over*)

A close inspection of the weave *G* will reveal that each end has the same number and type of interlacings and that the only difference is in their relative positions. The method of raising alternate ends one step causes two broad twills to form. As the basic ground weave is the same all over the design, there is no marked difference in these twills; and the line of demarcation is made by the interchanging of the ends from the face to the back of the cloth. This causes each pair of threads to float over one pick at intervals and form one of the characteristics of this type of weave.

From the foregoing we realize that if we can make different ground weaves in the two twills, we can create a bolder effect in the cloth and make a distinctive addition to our range of designs. This idea has been attempted in design *J* and draft *J1*. Only a portion of the complete weave is shown. There are now three warp ends floating over one pick and forming the twilling units. The first and third of each trio of ends weave exactly alike and are not held rigidly in position by the central end. These ends have a tendency to bunch together; and this grouping, in certain constructions of cloth, appears rather unsightly. In order to provide an alternative, design *K* and draft *K1* are given. Although this design has not the clear-cut appearance of *J*, it removes any possibility of a fault of the character mentioned.

Designs *L* and *M* show how departures from straight twill effects can be made into interesting designs. The counterchange-chevron idea is very effective, and the size of its repeat suggests that it has been woven in a jacquard loom.

So far all the designs given have been similar in construction. In order to break away from these, we must have contrasting designs. A different type of weave is illustrated at *N* and draft at *N1*. It is quite an easy step to form chevron *O* and fancy weave *P* on the same basis.

Design *Q* is another steep-angled twill which can be used as an alternative to *N*. The back appearance of this weave is very striking and consists of a bold, steep warp twill. This factor alone can be an asset in selling the cloth, especially in these days when the back of the fabric is often used as a means of ornamentation in the making-up of garments.

The foregoing illustrations and discussion show that there is unlimited scope for development in certain chains; and it is the careful and artistic arrangement of these ideas which, as far as appearance is concerned, makes the difference between a salable and an unsalable cloth.

WHAT BROKE THE FILLING?

List of possibilities inside and outside the shuttle

By S. C. Mahaffey

FILLING breakage is one of the most aggravating troubles with which a rayon or silk weaver has to contend. It should be dealt with immediately upon the first complaint in order that loss of production and the weaving of bad grades may be avoided. Filling breakage causes cracks, heavies, lights, broken picks, and unnessary loom stoppage.

Filling breakage in one shuttle can usually be traced to faulty parts in that particular shuttle; for example, to bad porcelain eyes, cut tension pins, badly cut tension rings, improperly trimmed fur, insufficient fur to prevent the filling from flying wild from the shuttle, too much friction on the tension-ring rubber band, eyes too close to tension pins (where patented steel rings are used) and cutting the filling as the shuttle enters the boxes, low spindle or one that is crooked or broken, and a split in the bottom of the shuttle. These troubles are usually best remedied by replacement of parts.

Should a weaver report that more than one shuttle is giving trouble, it must be assumed that the loom itself or parts of the loom are doing the damage. A few of the things that will cause filling cutting at the box side of the loom (and which will usually leave an end or tail about 12 in. long) are listed below:

1. An improper curve on the binder, causing the shuttle to rise to the top of the box as it enters or leaves the box.
2. Boxes not timed right and unlevel. Low boxes cause more trouble than high boxes.
3. Worn-out rawhide pickers, also pickers off center. Pickers with too large a hole worn in them will also grip the shuttle point and cut it up to the top of the box, severing the filling at this point.
4. Picking too hard, too early, or too late is also known to cause trouble, as the boxes are not in position to receive the shuttle at the correct timing.
5. Shuttle running crooked, due to reed out of line, bad picker stick, loose heel bolt, box front too open at the front, and shed adjusted too high from race plate.

Filling cutting from the plain side to the box side of the loom can be helped by correction of most of the same faults—such as reed out of line, bad pickers on opposite end of loom, and box front too open at front or tilted in or out at the top so that the shuttle will not be parallel with the front in every respect. Filling-cutting seldom occurs at the plain side of the loom; but when it does, the solution is usually difficult.

Should a filling-cutting job be right directly in the edges, the trouble may be traced to the edge having flats, too many ends on the same shaft and too many ends in one heddle. Cutting in the edges has occasionally been traced to tight warps; but this is very seldom, as many other troubles arise from this difficulty before cutting of the filling can begin.

Cut feeler blades in the center stop motion will also cut filling; and unless the music-wire spring is correctly adjusted and the knock-off dagger is set to the point, broken picks will occur. If the music-wire spring is too tight or too loose, trouble will result from the heavy strain on the filling or the sudden snap as the blades strike the filling.

When you start looking for the trouble in a filling-cutting job, do not by any means overlook the filling itself. It is never safe to consider that it is perfect. Filling is sometimes received from the throwsters with rust spots all through it, also with cut places from bad guides on the copping machines and with other damages originating in the copping. Quite often a fixer may save himself time and unnecessary work by finding these defects promptly.

Proper humidity plays a big part.

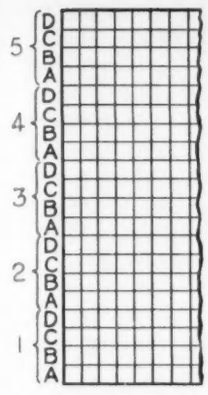


Fig. 1

KNIT-PATTERN FIELDS

Double spiral hides repeat and multiplies design-area possibilities

By J. B. Lancashire

***THAT PATTERN FIELDS** for circular knitting are not so restricted as most designers believe is the main purport of this article, which began on page 72 of last month's issue and is concluded here.*

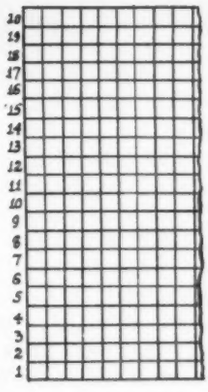


Fig. 2

TO satisfy conditions essential to patterning in rectangular areas, the wheel must sooner or later gain exactly one width in relation to the cylinder. Taking the case of 480 needles and 100 tricks, the wheel is four widths ahead after the first revolution, three widths after the second, two widths after the third, and one width after the fourth. The cylinder has gone around four times before the condition is satisfied, and therefore x, which is the number of revolutions of the cylinder, is 4. The number of needles engaged with the wheel is 4×480, or 1920; tricks, 1920, or $(19 \times 100) + 20$; revolutions of the wheel, y, 19.

Neither of the quantities x and y is known until the equation containing them is solved by trial. The values obtained by trial must be the lowest possible. The value of x decides the bias of the pattern and gives the key to the order of reading the design courses for each feed. The value of y has no practical application.

As an example, let us reconsider the 660 needles and 100 tricks. At the first revolution of the cylinder the wheel goes around six complete times plus 60 tricks, which means that it gains three widths. After the second revolution of the cylinder, it has gone around thirteen times plus 20 tricks—that is, one width. Hence, the equation $5y = 33x - 1$ becomes $(5 \times 13) = (33 \times 2) - 1$. Therefore, $x = 2$ and $y = 13$.

With the 840-needle machine, we have the following remainders: after the first revolution of cylinder, $840 - 800 = 2$ widths; after the second, $1680 - 1600 = 4$ widths; and after the third, $2520 - 2500 = 1$ width Therefore $x = 3$ and $y = 25$.

In Figs. 1 and 2 two different ways of specifying the pattern courses are shown. In both cases the lettering and/or numbering is started at the bottom and the courses are taken in regular order. In Fig. 1 letters are used to denote feeds, and the differently lettered courses are numbered alike. *A* refers to the first design feed, *B* to the second, *C* to the third, and *D* to the fourth. The courses to be made at the first design feed are *A1, A2,* etc.; at the second design feed, *B1, B2,* etc.; and so on.

It has already been mentioned that the relation between R and d determines the order of reading the pattern courses belonging to each feed ("feed" must be understood to mean group of feeds when two or more are required to make a complete design course). The order when taking each feed separately is 1, $1 + x$, $1 + 2x$, etc. Thus, on a 480-needle machine, when the area used is 20×20, the correct order is 1, 5, 4, 3, 2. The quantity $1 + 2x$ gives 9; but as there are only five courses to be developed by each feed, the number of the course is $9 - 5$, or 4. Similarly $1 + 3x = 13$, which, upon the subtraction of 10, gives 3; while $1 + 4x = 17$, which, upon the subtraction of 15, gives 2. The order is then repeated.

In the second case, with 660 needles, the order is 1, 3, 5, 2, 4; and in the third case, with 840 needles, it is 1, 4, 2, 5, 3.

If the method of numbering shown in Fig. 2 is adopted, the order of reading is as follows: 1, $1 + xF$, $1 + 2xF$, $1 + 3xF$, $1 + 4xF$ for feed 1; 2, $2 + xF$, etc., for feed 2; 3, $3 + xF$, etc., for feed 3; 4, $4 + xF$, etc., for feed 4. The reading for the 480-needle machine is given below:

Feed 1—courses 1, 17, 13, 9, 5.
Feed 2—courses 2, 18, 14, 10, 6.
Feed 3—courses 3, 19, 15, 11, 7.
Feed 4—courses 4, 20, 16, 12, 8.

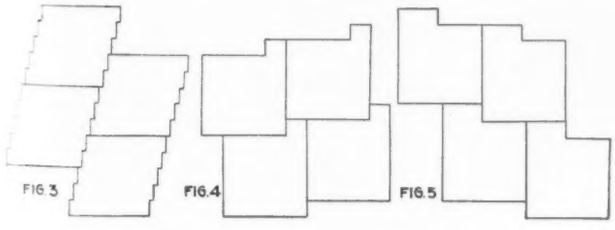
On the 660-needle machine each feed would take the same rows, but in a different order. The order for the first feed, for example, would be 1, 9, 17, 5, 13. The first feed on the 840-needle machine would take the same rows in order 1, 13, 5, 17, 9.

4. Development with Double Spiral

Pattern development with double spiral is of advantage when it is desired to hide the repeat, as in the production of ripple, crepe, and similar effects. Its chief value, however, lies in the fact that it enables more suitable designing areas to be obtained when conditions are not favorable to patterning in rectangular areas. The areas may take two forms: (a) rhomboidal (staggered) and (b) six-sided (chimney-pot).

Fig. 3 shows a rhomboidal area twenty wales wide and twenty courses deep. This area, when employed on a machine with 639 needles and four design feeds, will be developed as shown in the diagram. For the purpose of finding a suitable area, the machine is considered to be a 640-needle machine. This number allows a pattern width of 20 to be employed; and, as there are 32 repeats of this width, a depth of 5 per design feed is possible. The value of x is 3. Hence the design falls 12 courses in the direction of knitting (knitting is assumed to take place towards the right). The rules for reading the pattern remain unaffected. The slope is in the direction of knitting, because $640 = 639 + 1$. Had there been 641 needles in the machine, it would have been in the opposite direction. It may be noted that the best rectangular area obtainable with 639 needles and 4 feeds is one comprising a width of only 9 wales.

Fig. 4 shows a six-sided figure which, with the aid



of wheels containing 110 cuts, can be employed as a design area on the same machine. Theoretically, wheels containing any number of cuts can be used, but the design areas so obtained are not always of a convenient shape for practical purposes. The best way to find a suitable size of wheel is to add to or subtract from the number of needles a predetermined width and then take a convenient factor of the sum or difference. Choice must be made of a width which will give an appropriate number. Thus, if $W = 21$, $N + W = 660$, and a wheel containing 110 cuts can be used. The depth per feed $= 110 \div 21 = 5\ 5/21$ courses.

If this method is adopted, d is always equal to or a factor of $(N \div W) \pm 1$. If a width is added, the design rises in the direction of knitting; while if a width is subtracted, the design falls. The extent of the rise or fall is F courses between pattern widths. For the reading of the pattern, the method of Fig. 1 is recommended. The lettering is done from the bottom upward in any case, but the numbering must be downward if the depth per feed is equal to, or a factor of, $(N \div W) + 1$, and upward if the depth per feed is equal to, or a factor of, $(N \div W) - 1$. Courses are read in numerical order.

The areas inclosed in Fig. 5 are developed with wheels containing 115 cuts, and the diagram indicates how they are disposed in relation to one another when these wheels are fitted to a machine having 711 needles and four feeds.

$W = 21$; hence $d = 115 \div 21 = 5\ 10/21$. 115 is a factor of 690, which means that d is a factor of $(N \div W) - 1$.

It is seen that the design area falls F courses between pattern widths in the direction in which knitting is assumed to take place. Another interesting point to bear in mind is that the fractional width is at the right-hand top corner when one width is added to the number of needles and at the left-hand top corner when one width is taken away. If the direction of knitting were reversed these positions would be altered accordingly.

COTTON TWILLS

By John Hoye

THIS treatise on the constructions, finishes, and uses of STAPLE COTTON FABRICS began in the January issue. The present instalment, which is the eleventh, covers canton flannels and four-leaf filling-face twills.

Canton Flannel

Canton flannels are 3/1 four-harness warp-face twills made with heavy, coarse, soft filling yarn and finer, lighter-weight warp yarn. The cloth is napped on the back, the soft-twisted filling giving a long, thick, heavy, fleecy nap. The twill runs upward to the left. When these fabrics are napped and used in the gray state, they are known as "brown canton flannels"; and their uses in the gray include mittens, gloves, pocketings, etc.

The lighter weights are converted into "bleached canton flannels." These do not have the thick, fleecy nap of the heavier weights and are usually employed for underwear, pajamas, linings, etc.

Widths: Usually 33 or 34". Also made in 27, 28, 30, 36, 41".

Warp yarns: 14s to 22s.

Filling yarns: 5s to 11s.

Construction: Usually not quoted—only the width and weight being given.

Examples of canton flannels:

Lighter weights:

27" 4.00 yd.—also made in 4.50, 4.90 yd.
28" 3.60 yd.—also made in 4.00, 4.50 yd.
30" 2.25 yd.—also made in 2.50, 2.75, 3.25 yd.
34" 3.00 yd.—also made in 3.50, 4.00 yd.

Heavier weights:

33" 72x44 9 oz.
34" 64x44 8 oz.—also made in 5 1/3, 6, and every ounce up to 14.
36" 62x42 2.50 yd.
41" 62x42 2.50 yd.

Four-Harness Filling-Face Twill

Four-harness (or four-leaf) filling-face twills are 1/3 twills (one up, three down) in which each pick floats over three warp ends and under one warp end to each repeat of the weave. The twill line runs upward to the right. Carded yarns are used as a rule, but better qualities are made with combed yarns. When made in 35-in. width and dyed black, they are known as *Alberts*. These filling-face twills were formerly largely used for linings, pocketings, etc. Because of the long float of the filling on the face, a high luster is obtained in the mercerizing and schreinering operations. Rayon twill linings have now replaced many of these cloths.

A special five-leaf *Albert* is made for the lining of army wool coats—35", 72x132, 3.20 yd., all single combed yarns.

Finishes used: Mercerized, schreinered, imitation-mercerized, shirting. Usually dyed (lining shades). Also printed for shirtings, linings, etc.

Uses in finished state: Vest and coat linings, pocketings, sleeve linings, shirts, etc.

Widths: 31, 35, 38, 40, 43".

Constructions: 64x80 to 96x160.

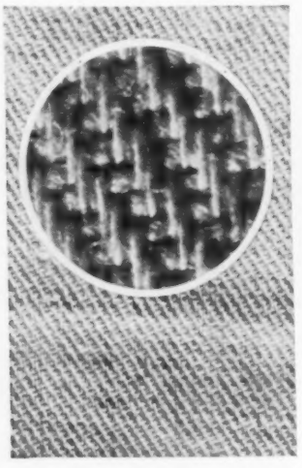
Warp yarns: 24s to 40s.

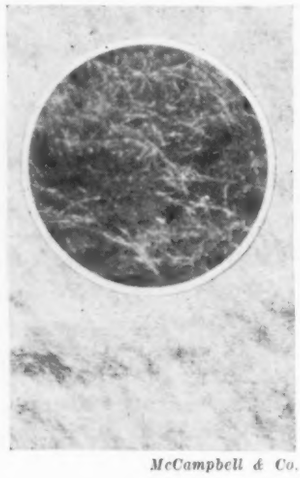
Filling yarns: 26s to 42s.

Examples of 4-leaf filling-face twills:

31"	64x100	4.20	39"	68x80	3.00
31"	72x100	3.95	40"	64x104	3.95
33"	72x120	3.10	43"	64x104	3.80
35"	64x80	5.10 (Albert)	43"	72x120	3.35
35"	68x80	4.00 (Albert)	43"	84x136	3.85
35"	70x78	4.40 (Albert)	43"	96x160	3.75*
36"	72x132	3.20 combed 5-leaf (Albert)			

* Combed

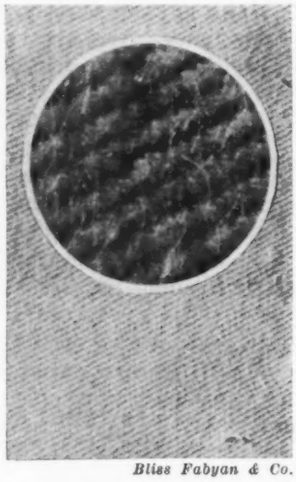




McCampbell & Co.

Face **Back**

CANTON FLANNEL—34", 8 oz.



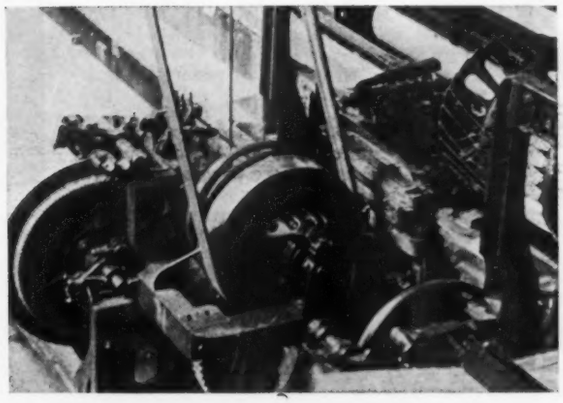
Bliss Fabyan & Co.

4-LEAF Filling-Face TWILL 33", 72x120, 3.10 yd.

ENERGY DRIVE FOR LOOMS

Most recent development of

Power Transmission Council



Energy drive on X Model loom operating at an average speed of 193.3 picks per minute.

HIGHER loom speeds, elimination of the "bump" noticeable in the lay when the loom is running, and reduction in percentage of seconds are the outstanding advantages noted in mill tests of a new loom drive, known as the Energy Drive, developed by the Power Transmission Council, 75 State St., Boston. This type of loom drive is the latest achievement of the Council, which for several years has devoted its efforts to the development and distribution of data concerning the economic application of power to manufacturing, with particular emphasis on the modern group drive. The Energy Drive has been installed on Draper X Model looms in a number of mills, and has been converted for application to E Model and other slower-speed-type looms.

Simple in Principle

The Energy Drive is simple in principle. It consists of a flywheel pulley, which is attached to the loom in place of the regular pulley if the loom has been belt operated through a friction or clutch drive, or in place of the large gear if the loom has been unit operated and is being converted for group operation. To utilize the new drive, the loom must be operated through a friction device or clutch. If the loom has been tight-and-loose-pulley operated, it can be easily converted to friction drive by obtaining the required attachments from the loom manufacturer.

The X Model flywheel pulley must be at least 14⅞ in. in diameter and must weigh at least 88 lb.; it may be 15⅞ in. in diameter, which will give a weight of 108 lb. The E Model flywheel pulley must be 14⅞ in. in diameter and should weigh about 100 lb. The flywheel pulley for the E Model and similar types of slow-speed looms is a duplicate of the regular pulleys employed with friction drive, except that it is 14⅞ in. in diameter and has built into it a 3-in. iron rim. For broad looms (over 50 in.) the flywheel pulley should be larger. Space will usually permit a pulley of from 16 to 18 in. in diameter, and it should embody the 3-in. iron rim, as does the flywheel pulley for narrow looms.

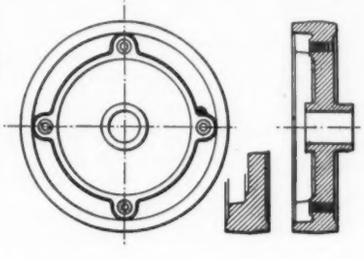
The loom develops a highly varying load. The picker hits the shuttle once with each revolution of the loom pulley. This occurs during a small fraction of one revolution of the pulley, but during its occurrence the load is many times that of the load occurring during the rest of the revolution. When a loom is belt operated, this sudden shock load causes the belt to stretch slightly, and when the load is relieved the belt contracts, causing an uneven supply of power. When a loom is motor operated, this load variation must pass through the gear and pinion, again making it difficult to get smooth operation.

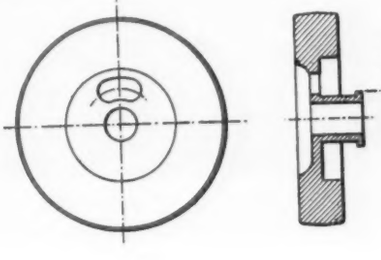
How It Works

The solution to the problem, then, is obviously that of placing a supply of energy in the loom which may be called on to furnish extra power at the moment the picker hits the shuttle, thereby relieving the transmission equipment of the sudden shock load. The Energy Drive does just that, its flywheel gradually storing up energy between picks and expending it at the moment of the pick.

Tests made on a trial installation at the Ninety-Six Mill, Ninety-Six, S. C., showed that the speed of X Model looms operating with group drive could be increased from 180 to 193 picks per min. Following these tests, additional looms in this mill were equipped with Energy Drive and records of loom performance were kept by the Power Transmission Council over an 8-week period. These records corroborated the results of the preliminary trials as to the increased production made possible by the smoother operation afforded by the Energy Drive.

Energy pulley for X Model loom.





Energy pulley for E Model loom.

THE PERSONAL PAGE

Harold L. Bache

J. Chester Cuppia

Harold L. Bache of J. S. Bache & Co., New York, has been elected vice-president of Commodity Exchange, Inc., New York, heading the Commission House Group of that Exchange. In his new capacity Mr. Bache succeeds **J. Chester Cuppia** of E. A. Pierce & Co. and becomes a member of the Executive Committee of the Exchange. Both Mr. Bache and Mr. Cuppia were identified with the former National Raw Silk Exchange.

Willard H. Cummings, president and treasurer of Daniel E. Cummings Co., Newport, Me., has been elected treasurer of Amos Abbott Co., Dexter, Me.

Caldwell Ragan has been elected president of Ragan Spinning Co., Gastonia, N. C., succeeding his father, the late G. W. Ragan. **Mrs. G. W. Ragan** was made vice-president, and **George Ragan,** secretary.

Thomas J. Wallner was elected president, treasurer and general manager of the new Wallner Silk Mills, Inc., Pulaski, Va. **D. Robley Wood** was elected vice-president and **Howard C. Gilmer, Jr., secretary.**

Gerrish H. Milliken, of Deering Milliken & Co., New York, was elected to the board of directors of Association of Cotton Textile Merchants of New York to fill the unexpired term of the late Walter S. Brewster.

Maj. A. Erland Goyette, president of Joseph Noone's Sons Co., Peterborough, N. H., has retired as president of the New Hampshire Manufacturers' Association.

M. Hazen Chase has been elected president of the Harris Silk Hosiery Co., Springfield, Mass., to succeed **Edgar G. Harris. Lytton W. Powell** has been elected vice-president. Mr. Chase was formerly treasurer of the company, an office now held by **Frederick Scarborough,** receiver.

George R. Murphy, for a number of years superintendent of Asheville (N.C.) Cotton Mills, has been elected treasurer of the company to succeed the late M. D. Long. He will continue as superintendent in addition to his new duties.

Gordon Harrower, treasurer of Wauregan-Quinebaug Mills, Danielson, **David Moxon** agent of American Thread Co., Willimantic, **J. W. Hickerson** of Cheney Brothers., Manchester, and **R. H. Valentine** of Warren Woolen Co., Stafford Springs, are members of a commission of nine named by Governor Wilbur Cross of Connecticut to investigate conditions in the textile industry of the State.

Frank H. Goodchild, president of J. & J. Cash, Inc., South Norwalk, Conn., has been appointed a member of the legislative committee of the Connecticut Chamber of Commerce.

W. W. Glenn, Lincolnton, N. C., has sold his interest in Thread Spinners, Inc., formerly Wampum Cotton Mill, of that city, to the Paulson-Linkroum Thread & Yarn Corp., New York. The sale price was not made public. **W. Earl Crenshaw,** will continue as superintendent of the plant, according to **Leonard C. Linkroum,** who was elected president and treasurer of the corporation.

James E. Bryan, treasurer and general manager of Undine Twine Mills, Inc., Moodus, Conn., retired Oct. 15 as president of Middlesex County Mfrs.' Association, and was elected a director for two years. **F. I. Hall** of Rockfall Woolen Co., Middletown, was also named to the board for two years.

E. P. Cofield, formerly general manager of Chadwick-Hoskins Co., Charlotte, N. C., recently took charge of manufacturing at Edna Cotton Mills, Reidsville, N. C.

Franklin W. Hobbs, president of Arlington Mills and chairman of Textile Foundation, holds a conference with himself—or so the trick photograph taken in Washington not long ago makes it seem

Walter K. Porzer

Sidney Munroe

Sydney P. Munroe, assistant to the president of the Cotton-Textile Institute since 1931, joined the staff of Wellington Sears Co., New York, on Nov. 1. He will direct the cost department of that company. A graduate of Lowell Textile Institute, Mr. Munroe has had wide training and experience in mill work, having been connected with the operation of several plants in New England. From 1920 to 1925, he was manager for Ralph E. Loper & Co., textile cost experts and industrial engineers, Fall River, Mass., and then established the Greenville, S. C., office of that company, remaining there until 1930. In that year he joined the Cotton-Textile Institute as manager of the cost department, and became assistant to the president in 1931, as well as director of the field staff. Mr. Munroe's work as compliance director of the Cotton Textile Code Authority from 1933 to 1935 was widely known throughout the industry.

Walter K. Porzer, of Lambert & Feasley, New York, has been appointed general director of Associated Wool Industries, succeeding **Ernest C. Morse.**

J. E. Sirrine, president of J. E. Sirrine & Co., Greenville, S. C., was honored on Nov. 14 when the new municipal stadium was formally dedicated "Sirrine Stadium."

John F. Bannon has resigned as manager of Lincoln Bleachery & Dye Works, Lonsdale, R. I.

R. J. Randolph of Johnson City, Tenn., has assumed his duties as manager of West Jefferson (N.C.) Hosiery Mills, now operating its own finishing plant under a new system.

Harry Lineberger has become general manager of Knit Products Corp., Belmont, N. C., succeeding **A. F. Dichtenmueller,** who resigned to accept the presidency of Apak Food Mfg. Co. at Charlotte, N. C.

Dr. A. T. Cameron and **H. E. Michl,** both of the Wharton School of University of Pennsylvania, have joined the faculty of Philadelphia Textile School.

Gene Tathwell, I. J. Alfaro, and **H. L. Fair,** with the Old Hickory, Tenn., plant of Du Pont Rayon Co., are now enroute to Argentina where they will join **R. L. Richards,** of the same organization, in the operation of a Du Pont rayon plant recently established there.

Hext M. Perry, for a number of years purchasing agent for many cotton mills

in the vicinity of Greenville, S. C., was recently elected president of the Carolinas-Virginia Purchasing Agents Association at the annual meeting held in Charlotte, N. C. **H. A. Pos,** with American Enka Corp., Enka, N. C., was made vice-president.

Harry Carter, superintendent of Cascade Rayon Mills, Mooresville, N. C., has been transferred to the Altavista, Va., plant of Burlington Mills, succeeding **K. H. Boydell** who has been transferred to the Reidsville plant in the same capacity.

Valois Varick, for many years in the finishing business, has been placed in charge of selling for Cheslyn Piece Dye Works, Chester, Pa., with offices in New York.

Jack Turner, formerly superintendent of Belle Knitting Co., Sayre, Pa., is now president of Apex Knitted Fabrics, Inc., New York.

J. J. Newton has been named superintendent of Fairforest Finishing Co., Clevedale, S. C. He was formerly connected with Martin Dyeing & Finishing Co., Bridgeton, N. J.

Adolf Jaekli, who has been connected with Schwarzenbach Huber Co., New York, for 39 years, resigned his position with that firm recently. He was in charge of constructions.

A. A. Theriault has been named New England representative of Monument Mills, Housatonic, Mass., with headquarters at 99 Chauncy St., Boston.

A. L. Laing has resigned as superintendent of the Ford Mfg. Co., Waterford, N. Y., and is now with Faith Knitting Mills, Averill Park.

Textile Calendar

American Society of Mechanical Engineers, annual meeting, New York, Nov. 30 to Dec. 4, 1936.

National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, Nov. 30 to Dec. 5, 1936.

American Association of Textile Chemists & Colorists, annual meeting, Providence, R. I., Dec. 4 and 5, 1936.

Gaston County Division, S.T.A., probably at Gastonia, N. C., in December before middle of month.

Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, 1937.

Marshall Orr, president and treasurer of Orr Cotton Mills, Anderson, S. C., was recently elected head of the Print Cloth Group of Cotton Manufacturers, succeeding **Walter S. Montgomery,** of Spartanburg, S. C. At the same time, the group voted to continue the sales-reporting services as during the last several years, with a continuation of the office in New York.

J. W. Block has been chosen president and treasurer of Meyer & Marks Yarn Co., New York, succeeding the late Louis Marks. Mr. Block has been with the company and its predecessors for fifteen years.

Count Stephan Ponyatovsky will open a New York sales office for the recently organized Atlantic Print Works, Paterson, N. J. He was formerly president of Cretona Print & Dye Works, Clifton, N. J.

George I. Rounds, formerly in charge of the New England office of Industrial Rayon Corp., Cleveland, Ohio, has been transferred to the Charlotte, N. C., office to succeed the late Bruce Griffin.

E. L. Whitaker, who has been in charge of the New York office of American Finishing Co., Memphis, Tenn., for the last seventeen years, has returned to headquarters at the plant, where he will supervise the office. The New York office of the company will be in charge of **G. E. Scheer.**

T. N. Van Dyke, treasurer of Richmond Spinning Co., Chattanooga, Tenn., has retired after 33 years of service with the concern. Mr. Van Dyke was also treasurer of the subsidiary company, Chickamauga Knitting Mills and of United Hosiery Mills Corp., both of Chattanooga.

W. H. Dietze has been appointed sales agent for the women's department of Farr Alpaca Co., Holyoke, N. Y., and will make his headquarters at the newly opened offices at 469 Seventh Ave., N. Y. He was formerly general sales manager of Stehli & Co., Inc.

Lawrence E. Eberhard has been appointed as permanent receiver for the Fiory Dye Works, Inc., Paterson, N. J.

Frank J. Harwood, manager of the Appleton Woolen Mills, Appleton, Wis., for 50 years, and now president, was honored by the 150 employes of the plant recently and presented a plaque and a hand engraved book. Coming to Appleton from Ripon, Wis., Harwood entered the employ of the Hutchinson Woolen Co., and when the Appleton Woolen Mills was organized in 1881 he was named manager.

Obituary

Irving A. Diener, aged 69, president and treasurer of Royal Underwear Co., Reading, Pa., and of Hamburg (Pa.) Knitting Mills & Bleach Works, and president of Ontelaunee Knitting Mills, Leesport, and of Spring City (Pa.) Bleach & Dye Works, died Oct. 19 at his home in Hamburg.

Louis Marks, aged 61, president of Meyer & Marks Yarn Co., New York, died on Oct. 14. Mr. Marks was associated with the textile business for 45 years, starting with the concern of G. S. Long & Co.

W. Thomas Love, aged 77, of Gastonia, N. C., president and treasurer of Spencer Mountain Mills and chairman of the board of the Ranlo Mfg. Co., died suddenly on Oct. 15.

John Duff, aged 78, president of Soule Mill, New Bedford, Mass., died at his home in that city on Oct. 18.

Edward B. Merriam, aged 64, for many years identified with the investment side of the textile industry in Rhode Island and interested in the Lippitt Woolen Co., died at Providence on October 18.

Alexander P. McAllister, aged 65, founder of National Cotton Mill, Lumberton, N. C., died at his home there on Oct. 11.

Sumner T. Packard, aged 62, president of the Dana S. Courtney Co., Holyoke, Mass., died at the Deaconess Hospital, Boston, Mass., on Oct. 9.

William H. Drexel, aged 53, head of Drexel Hosiery Co., New York, died on Sept. 10 at the Temple University Hospital, Philadelphia, after an illness of about three months.

Henry L. Dursin, aged 69, general manager and secretary of the Lafayette Worsted Co., Woonsocket, R. I., for the last 35 years, died at his home in Cumberland Hill, R. I., on Sept. 27.

Frank W. Morgan, aged 62, head of S. M. Schwab, Jr., & Co., New York, and dean of the drapery business, died on Oct. 14.

Walter Koch, former manager of the Garfield (N.J.) Worsted Mills, died at sea early in October when returning from a visit to Germany.

Stanley Niver, aged 36, advertising manager of Cooper, Wells & Co., St. Joseph, Mich., for the last three years, died Sept. 6.

Jos. Horsfall, aged 90, manager of the Montreal Woolen Co. for many years, and prior to that with the firm of Mark Fisher & Co., died recently in St. Lambert, Que.

Frank Evanson Waterman, aged 67, formerly assistant treasurer of Butler Mill, New Bedford, Mass., prior to its merger with Hoosac Mills Corp., died suddenly at his home in Fairhaven, Mass., on Oct. 21.

Tom J. Arlitt, an overseer at Arlington Mills, Lawrence, Mass., for over 30 years, died on Oct. 12.

Henry C. Fisher, aged 36, New England sales agent of New Jersey Worsted Mills, with offices at Boston, Mass., died at Arlington, Mass., on October 18.

Edward T. Barnes, aged 66, overseer of Wateree Cotton Mills, Camden, S. C., died recently at a hospital in Columbia, S. C.

Omer Blais, aged 63, foreman of the spinning room at the Cocheco division of Pacific Mills, Dover, N. H., died in that city Oct. 11.

G. Lewis Walters, aged 62, vice-president, secretary and treasurer of Adams & Westlake Co., Chicago, died suddenly Oct. 1.

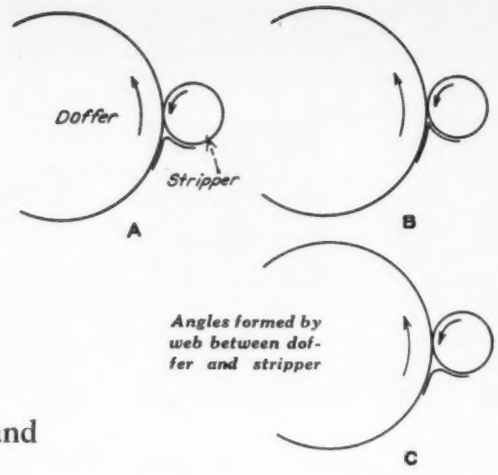
Frederick W. Ely, aged 75, formerly mill agent for Columbia Mfg. Co., died in Greenville, S. C., recently. Funeral was held in Lowell, Mass.

Wheaton Kittredge, aged 53, former counsel for the American Woolen Co., and other textile concerns at Boston, Mass., died suddenly in Geneva, Switzerland, on Aug. 9.

M. D. Long, aged 83, secretary-treasurer of the Asheville (N. C.) Cotton Mills, died recently at his home there.

IRREGULAR WOOLEN ROPING

Often traceable to blend quality, ring or tape width, or web tension



By L. A. Crosland

A ROPING which has not a regular and uniform diameter is difficult and costly to convert into a sound, strong yarn, owing to the breakages which occur in spinning and to the amount of twist required. Unevenness usually takes the form of thin places in the roping, caused mainly by one of the following difficulties:

1. Material in blend too low in quality to produce the required counts of roping.
2. Use of too wide a ring or tape on the condenser for the production of fine counts.
3. Too much tension on the delicate web of material at some point on the condenser.

The first point mentioned—that of the material—is a matter for the blender and is one of the most prevalent causes of poor, yet costly, yarns. To equal the strength of a worsted or cotton yarn, a woolen yarn must have more fibers in its cross-section, because its fibers are not arranged so parallel. If the material is too coarse for the counts—that is, if there are not sufficient fibers per unit of length to give a yarn of normal strength, the yarn will have thin places. Such yarns are cheap in material costs but dear in processing costs. The remedy is to pay more for the stock but to save on the processing because of the better spinning obtained, and so to make better yarns at as low cost, or even at a lower cost.

The second difficulty—that of unsuitable condenser equipment—is met with when trying to condense to fine counts on a double ring-doffer condenser which is suitable for only coarse counts and low materials. For a sound roping, the fibers must be spread with perfectly even density over the full width of the ring or tape. If there are too few fibers to cover the ring completely, there will be patches of fibers alternating with bare places, and uneven ropings will result. If material which behaves in this manner on one condenser is transferred to a machine with narrower rings or tapes, the same number of fibers spread over the narrower widths will produce perfectly level ropings, other conditions being suitable. In this connection it must be observed that the ring or tape doffer must be in perfect condition, or it will not clear the finisher cylinder completely and thin places will result.

The avoidance of thin places at the condenser is one test of the boss carder's skill, and from his viewpoint the third difficulty is therefore the most important. The places at which too much draft may occur are the following: (1) between doffer and angle stripper, (2) between stripper and dividing rolls, (3) between tapes and rub aprons, and (4) between aprons and drums.

The stripper must be set into the doffer from 1/32 to 3/32 in. in order that the teeth of the latter will be kept clear at the points and will clear the cylinder. This setting should be uniform all across the machine and, once obtained, should not be varied. Any variation needed in the tension of the web of material should be obtained by varying the speed of the stripper and not its setting. In passing from doffer to stripper, the web must rise well up into the angle between doffer and stripper, but not so high that it will be nipped between the two. In the accompanying diagram *A* shows the correct angle of stripping; *B*, too high a position, except for very fine and short material, which will not stand any tension; and *C*, too low an angle, which is a common cause of thin places on all but very long, strong materials. To remedy *B*, speed up the stripper slightly; and for *C*, slow down as required. Actually it may be found that, with a correct angle of stripping, the surface speed of the stripper is lower than that of the doffer, although this would appear to be impossible. The explanation is that the thickness of the web of material makes much more difference to the small diameter of the stripper than it does to the large diameter of the doffer, and so the material speed is approximately the same.

As the web passes from the strippers to the dividing rolls, it is in full view, and any apparent pull on the material must be eradicated by a speeding up of the doffer, not just the stripper, as speeding up the latter alone would alter the relationship between doffer and stripper.

Between the tapes and the rub aprons, the delicate ropings must not be subjected to any tension whatsoever. To obtain satisfactory results, the tapes must all be of one tension, and the speed of the aprons must be adjusted so that the webs, in being stripped from the tapes, dip slightly, proving that there is no strain on them.

Between the aprons and the spool drums the speeds must be so regulated that a sound spool is wound without sufficient pull to cause thin places. At this point, the material having been rubbed, will stand a little more tension, but care must be taken that it is not given too much.

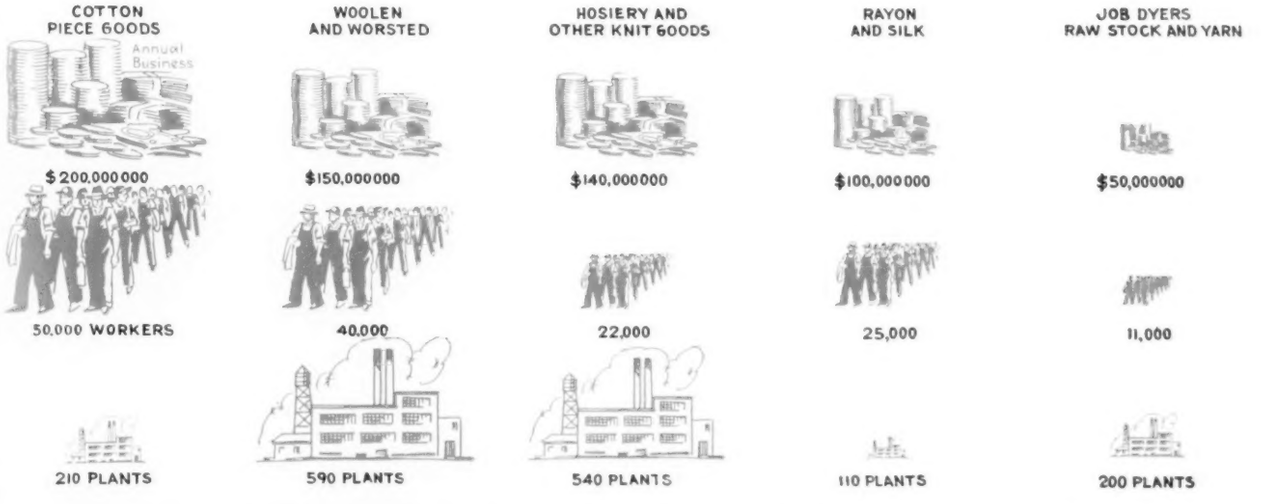
Thin places caused in the drafting operation in spinning are usually due either to an attempt to use too much draft or, and this is the most common cause, drafting with insufficient twist. If there is not sufficient twist to bind the fibers together, irregular slippage of the fibers takes place.

Processing Section

Buried in a mass of government statistics, tucked away in a corner of a mill, the processing division too often is regarded only as a minor part of the textile industry. Bring it into the light, and the processing branch holds second place to none. Bleaching, dyeing, printing, and finishing account for half the total value of textiles added by manufacture. One or more of these operations is carried out in 40% of our textile mills. Over 150,000 workers are engaged in these processes. Add to this such operations as warp sizing, wool scouring, silk and rayon soaking, and one begins to realize the magnitude of this industry which is not a single, coherent industry, but which cuts across and leaves its mark on all branches of the textile business. Today many changes are taking place in textile processing. What is happening is of vital interest to every textile man. Hence we offer this special processing section of TEXTILE WORLD not to the dyer and finisher alone, but to all our readers.

PRINCIPAL BRANCHES OF DYEING AND FINISHING INDUSTRY

[Data on some 430 mills having departments for dyeing raw stock and yarn for their own use, not included]



Textile industry is profiting through development of many

NEW DYES AND CHEMICALS

NEW dyes and chemicals are being introduced at such a fast and furious rate that Mr. Average Textile Man is totally bewildered. Monday he hears of a soapless soap; Tuesday he is told of a compound to make direct dyes fast to washing; Wednesday he is asked to try a new sizing agent which will cure all his troubles; Thursday he is offered exclusive rights to a new finish which will revolutionize the industry; and so on through the week.

The remarkable thing about it all is that the majority of the new chemicals are not mere nostrums; many of the claims made are not too extravagant. Use of some of the new materials has resulted in substantially lower manufacturing and processing costs and in better quality of finished products. Use of others has permitted the production of entirely new finishes and even new textiles.

By Winn W. Chase

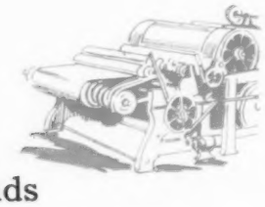
Assistant Editor, Textile World

Let's look these new developments in the face and try to see what they actually mean to the textile industry.

First we shall consider what is happening in the field of dyes. Starting practically from scratch at the beginning of the World War, dye manufacturers had a production of over 100,000,000 lb. last year. They are constantly widening the range and improving the properties of their products. Thus, with the advent of synthetic fibers, level dyeing direct colors for viscose were developed, and entirely new classes of dyes for acetate were evolved. Production of the latter types of dyes has grown by leaps and bounds, American manufacturers producing nearly 2,000,000 lb. last year, an increase of 65% over 1934. Recently a British manufacturer has announced the first of a series of water-soluble dyes for acetate. Fast-to-light direct dyes have proved a boon to the cotton dyer, while fast acid dyes have aided the wool dyer. Consumption of indigo has declined sharply in recent years; but that of vat, naphthol, Rapidogen, Rapid Fast, and Indigosol colors has gained. Introduction of instantly dispersable vat dyes greatly facilitates the use of this class of colors, and is judged by some authorities to be the most important of recent developments in the dyeing industry.

During the last decade several of the dye companies have gone into the manufacture, first, of dyeing and printing assistants and, later, of other textile chemicals. In 1933 production of these auxiliaries amounted to about 650,000 lb.; in 1935, 1,650,000 lb.; output this

year is expected to be still greater. Although many of these new assistants are of unquestionable merit, more important yet is the fact that the large dye manufacturers, with their resources and facilities for research and development, are now definitely in the textile chemical game.



Sizing Compounds

Starch and starch derivatives, in combination with various softeners, are employed almost exclusively for sizing cotton warps. When the mills first began to warp size the synthetic yarns, they naturally adopted the use of starch, dextrin, etc. About four or five years ago gelatin-base sizing compounds started to gain in favor, and today practically all acetate yarns and probably 60% of the viscose used as warps are sized with gelatin. Sizing manufacturers are now working on the development of sizing compounds especially suitable for staple rayon.

There seems now to be a trend toward the use of prepared sizing compounds, particularly of the more concentrated types. In Europe considerable experimental work has been done on the use of synthetic sizing compounds, and in this country investigations by the National Bureau of Standards have shown that sweet potato starch can be used satisfactorily for sizing cotton warps. As yet these developments are not of commercial importance, but they are indicative of the search for better and cheaper sizing materials which is now going on.

Soaking Agents

Somewhat analogous to the developments in warp sizing are those in throwing silk and rayon. Thus, the advent of rayon crepe called for development of crepe soaking or sizing agents and opened up a new market for gelatin, soap, and oils. Again, introduction of improved silk soaking compounds has facilitated the knitting of hosiery by the three-carrier system.

Soaps and Other Detergents

From the standpoint of quantity used and diversity of application, soaps and other detergents are among the most important of the textile chemicals. When a mill bought soap in the good old days, it had little idea what it was getting; but today a mill can purchase a straight tallow soap, or an oleate soap, or an olive oil soap in readily soluble chip or flake form and having a specified soap content.

From time to time various compounds have been brought out, which to some extent have displaced soap in certain specific applications. Examples are various boil-off oils and fulling agents. More recently a variety of fatty alcohol and fatty acid derivatives have entered the picture. These newer detergents are all considerably higher in price than soap, and, for that reason, it is not expected that they will ever take the place of soap. Rather they will find their major applications in processes where soap cannot be employed, or where the more satisfactory results obtained justify the additional expense of their use, either alone or in conjunction with soap. That many such applications are being found is proved by the fact that consumption of these materials this year will be about double that for 1935.

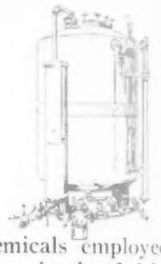
Closely allied with the subject of detergency is the condition of the water used in scouring and other cleansing operations. Introduction about two years ago of sodium hexametaphosphate, a compound which has the property of dissolving calcium and magnesium soaps in water or alkaline solutions, has been followed by the widespread adoption of this material in various processes where lime and soap spots were formerly a source of danger.

Fiber Lubricants

Over a period of years some rather significant changes have occurred in the field of fiber and yarn lubricants. In the wool industry, for example, former practice was to use animal and vegetable oils, such as lard oil and olive oil, as fiber lubricants. Gradually so-called solubilized mineral oils and other mineral oil compounds began to take the place of the older products, until today practically all of the fiber lubricants used in the woolen industry are of this type. Some of the larger worsted mills have experimented with mineral oil products, and the results of these experiments make it appear that the worsted branch may soon turn to the use of mineral oil.

Mineral oil compounds have been employed extensively in oiling rayon and in lubricating various types of knitting yarns. Spraying of cotton with mineral oil during the picking operation has become increasingly important of late, and it is estimated that by the end of this year mills taking more than 25% of the cotton consumed in this country will have adopted this practice.

The most recent development in fiber lubricants has been the introduction of synthetic organic chemicals which have lubricating and softening powers. Unlike oils, these compounds are completely soluble in water, and thus permit fulling, carbonizing, dyeing, and similar operations to be carried out without scouring of the yarn or fabric. To date, the relatively high cost of these materials has precluded their extensive use. It is quite possible, however, that within the next two or three years production costs will be reduced to a point which will make these new lubricants competitive with those now employed.



Bleaching Agents

Developments in chemicals employed in preliminary operations in the finishing plants include the introduction of de-sizing agents for removing gelatin sizes, kier-boiling assistants of various types, and scouring compounds brought out particularly for treating rayon and acetate. Caustic soda is now available in liquid form and is gaining favor rapidly in the textile industry.

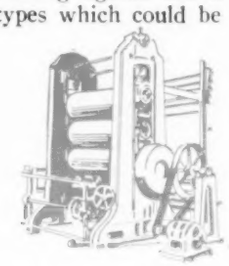
Sodium hypochlorite prepared from liquid chlorine has largely replaced bleaching powder for use in bleaching cotton. Increased use of peroxide bleaching solutions noted in recent years is due to several reasons, one of which is the introduction of 100 volume hydrogen peroxide.

Solvents

Whereas a few years ago, only a half dozen organic solvents suitable for textile use were available, there are now well over 50 chemicals of this type. Large quantities of certain of these are consumed in the manufacture of acetate yarn and smaller amounts are used in the textile industry proper. For some time, one or two companies have been scouring wool by the solvent process and recently several other mills have shown interest in that method. In conjunction with soap, sulphonated oils, etc., solvents find considerable use in degumming, scouring, kier-boiling, and similar operations. Various solvents prove useful in dissolving basic, vat, and naphthol dyes. In the production of coated fabrics—of which more later—solvents are essential. It appears certain that, as the possibilities of solvents are further explored, these materials will be employed much more extensively.

Printing Assistants

Mention has been made previously of the development by the dye manufacturers of various dyeing and printing assistants. Chemical companies other than those making dyes have also introduced many new products which facilitate dyeing and printing. Improved printing gums, reducing and discharge agents, developers, protective agents, and anti-foaming agents are a few of the many types which could be cited.



Finishing Materials

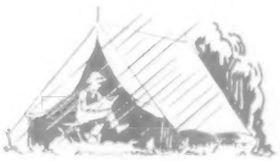
Coming to finishing materials, we find that many of the chemicals employed in obtaining the standard types of finishes have been greatly improved and that other compounds have been introduced which permit the production of new finishes far superior to those which have been possible in the past. In the first class, for instance, are improved starch products and other stiffening agents, non-oxidizing finishing oils, and several fatty alcohol and fatty acid derivatives. Proof of the advantages of these products is seen in their rapidly increasing use. Thus, a year from the announcement of one of the series of non-oxidizing finishing oils, the manufacturer reported that 60% of the orders he was then receiving was for a compound of that series; again, sales of the alcohol sulphate type of finishing compounds are expected to be 300% greater this year than last, with a further substantial increase anticipated in 1937. Scores of different compounds have been developed specifically for processing rayon and, in general, consumption of these is still rising at an even more rapid rate than is the production of the synthetic yarns themselves.

It is difficult to know where to draw a line which will distinguish precisely between chemicals employed in the production of standard finishes and those which give entirely new effects. But for our purposes it is sufficient to put in the latter category such materials as mothproofing agents, water repellents, latex, synthetic resins, permanent finishes, pyroxylin and other coating materials, deodorants, mildew preventives, flameproofing agents, and preshrinking agents for wool.

Synthetic Resins

Although the use of synthetic resins in the textile industry is in its infancy, we can already glimpse the possibilities of these compounds. Principal uses thus far discovered are in the production of crease-resistant finishes and waterproof finishes on silk and rayon, production of each of which has doubled every year since 1934. Two other applications which give promise of being important in the near future are for the production of wool-like finishes on staple rayon fabrics and abrasion-resisting finishes on a variety of textiles.

Over a period of several years there has been a gradual increase in the use of sulphuric acid, caustic soda, viscose, and other materials used in the production of permanent finishes. Following the expiration in 1937 of several of the patents covering the various permanent finish processes, a 100% jump in the permanent finish business, and a corresponding increase in the chemicals needed, is not unlikely. Recently other compounds, including various cellulose derivatives, have been developed, which will impart permanent finishes to textiles. These are already finding some application in the finishing industry and, as production costs are lowered, and as consumers come to realize the advantages of permanent finished fabrics, they will become more and more important.



Water-Repellents

Skipping mothproofing agents, which are discussed at some length in another article in this issue, we come to water repellents. Here development of improved types of water repellents and spot-proofing agents which can be applied by the one-bath method, plus a clever merchandising campaign which has awakened the consumer to the availability of water-repellent garments, has stimulated the market for water repellents.

Although the sales this year will be well over 50% in advance of those for 1935, there is still a large potential market for water-repellent fabrics which has scarcely been plumbed.

In 1924 imports of latex in this country amounted to 700,000 gal. This year, according to Dr. Royce J. Noble, they should total in the neighborhood of 12,000,000 gal. valued at over $5,000,000. While it is impossible to give a very close approximation of the total volume of latex used in the textile industry, the fact that each year for the last five years has shown a 35 to 40% increase over previous years indicates its growing importance. For backing carpets and other pile fabrics, Dr. Noble estimates that consumption this year will be about 1,000,000 gal. The largest single outlet thus far is in the production of Lastex and other elastic yarns. Additional important applications are in treating tire cords, in combining fabrics, and in finishing. The difficulties formerly experienced in the application of latex are gradually being overcome and new fields are being opened.

Coatings

Introduction of steel-top automobiles has lessened the demand for pyroxylin used in the manufacture of coated fabrics for the automotive industry. On the other hand, use of pyroxylin, cellulose acetate, and other cellulose derivatives in the production of coated fabrics in the finishing industry is starting to climb.

Deodorants, mildew preventives, flameproofing materials, pre-shrinking agents—one could go on almost indefinitely listing the chemicals which have come into prominence or which seem likely to do so in the next few years. Enough has been said, however, to indicate how rapidly new products are being adopted by the textile industry. In some instances the newer compounds are directly competitive with older products. For the most part, however, the recently developed chemicals are not replacing ones already employed, but are finding their chief uses in applications unheard of a few years ago. Due to style changes, progress in rayon manufacture, and other factors, there are a few chemicals which are not as widely employed today as they were in the past. Stannic chloride, which is used mainly for weighting silk, is perhaps the most conspicuous example.

It is apparent that recent chemical developments afford the textile processor unprecedented opportunities for improving existing operations and for creating new finishes and even new textiles far superior to any which have been available in the past. If the textile industry is to take the fullest advantage of these developments, it must do several things. It must cooperate with the chemical companies in finding new applications for these chemicals; it must work with the machinery builders in designing equipment to utilize these chemicals; and it must adopt a sound but vigorous merchandising policy which will bring to the attention of the consumer the advantages of the new finishes and new textiles made possible through the use of these chemicals.

Use of suitable equipment simplifies production of

COATED FABRICS

By John T. Gibbons
Textile Consultant

THE simplest method of applying a coating to a fabric is to pass the goods over two rolls separated by a distance of several inches and under a knife or doctor. This knife presses on the fabric and spreads or butters the coating over the surface of the cloth. With this method, which is illustrated in Fig. 2, the amount of coating applied in each passage of the cloth under the knife depends on the kind of knife used, the percentage of solids in the coating mass, and the pressure of the knife on the fabric. Few products can be completed with less than three coats and many require up to ten.

Types of Knives

In Fig. 1 several types of knives are illustrated. For a light surface coat, *E* is used. This knife has a sharp edge and removes most of the coating, leaving only a thin skim on the surface. For a heavier surface coat, *B* is used. This knife has an edge with a slight angle. Knife *A*, which has a curved edge, gives a heavy coat and tends to force some of the coating into the fabric. Type *D* will give the heaviest coating and also forces the coating into the fabric. Type *C* is used mainly for the top coat, which is generally of low viscosity. These knives are made to accommodate cloths up to 72 in. in width. They are about 80 in. long, 8 in. wide, and from $\frac{1}{8}$ to 1 in. thick. Increasing the thickness of the knife increases the amount of coating applied to the fabric. The knife is set rigidly in a support, which can be swiveled, so that the angle of the knife to the cloth can be changed from a right angle to an acute angle. The knife also has a vertical adjustment, so that it can be raised barely to touch the cloth or depressed to form an acute angle. The pressure of the knife on the cloth is regulated by the tension of the cloth, which, in turn, is governed by the brake on the let-off roll. The

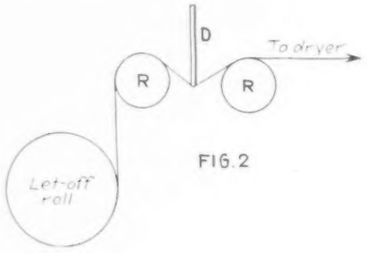


FIG. 2

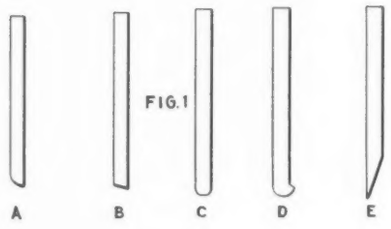


FIG. 1

let-off roll has a variable-tension device which automatically regulates the tension on the cloth as the roll gets smaller.

As much coating can be applied in one run as will give a smooth, even coating when dried. When a heavy coat is dried, the vapors from the lower layers make pinholes in the top layers. These pinholes are smoothed out if the coated fabric is later embossed. However, if the cloth is not embossed, the pinholes form defects, which must be avoided by building up the coat in thinner layers. This also makes for a better bond between the various layers. From 4 to 8 oz. of wet compound can be applied in one run. Since the coating mixture generally contains 40 to 50% of solids, this amount applied in each coat will build up the fabric rapidly. Doctor drops give trouble in coating. These are round globules of the mass which cling to the back surface of the knife until there is an accumulation of them, when they let go and appear on the fabric as heavy spots. This defect can be avoided by keeping the back edge of the knife sharp. As the knife wears

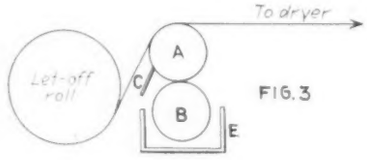


FIG. 3

rapidly, it is necessary to have spare knives to use while others are being repaired. The knife must be carefully ground to shape, and the edge must be true and smooth. In handling the knife, one must take care to prevent scars or injuries, which show up on the fabric in lines.

In Fig. 2 a doctor of Type *D* is used. *RR* are 4-in. steel rolls, chromium plated to prevent rusting and wear. The let-off roll has a brake, the adjustment of which keeps a constant tension on the cloth as it passes under the doctor. As the tension increases the coating is lighter, and *vice versa*. The dope is fed on the cloth through a molasses cock from a container which is suspended from a chain falls or hoist. A dam can be used on each selvage to keep most of the mixture from running off the sides. The small amount that does run off is collected in a container and later mixed with some solvent and reused.

Coating Equipment

A method of applying a light surface coat to a material, such as linoleum, is shown in Fig. 3. The coat applied is the top coat or finishing. The dope used is a low-viscosity solution, which will give a hard, lustrous surface. The box holds the dope, and a device is used to keep the liquor at a constant level and high enough in the box so that roll *B* dips in it. Roll *B* runs in the opposite direction from roll *A* and carries the solution up to *A* and coats it. The knife

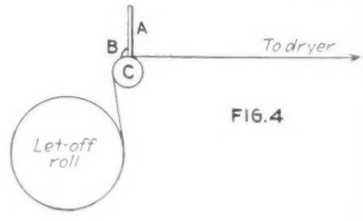


FIG. 4

C is adjustable, so that the weight of the solution on *A* can be varied before it touches the material which is to be coated, and which is in contact with *A*. When a light-weight coat is applied, as in this method, a speed of 30 to 50 yd. per min. can be attained.

A coater which is used generally in rubber coating, and which has been found satisfactory for pyroxylin coating is illustrated in Fig. 4. Roll *C* is rubber covered, and is driven. The cloth passes over it and is in contact with it; the dope is placed on the cloth in front of knife *A*. Knife *A* has a vertical and a horizontal adjustment, so that coatings of various weights can be obtained in one pass through the machine. Knife *A* is the same type as knife *B* in Fig. 1. The coating applied by using this type of machine can be kept almost wholly on the surface of the fabric when cloths of 4 yd. weight and heavier are used. On light-weight fabrics, there is some

penetration to the back of the cloth and onto the rubber roll. Unless the rubber roll is perfectly clean and uniform, the coating will be irregular and streaky. A special method of winding is used to prevent this when light-weight fabrics are being coated. The cloth is run off the top of the let-off roll, around roll *C*, down and around the let-off roll and over roll *C*, and then to the dryer. This means of wrapping gives two thicknesses of cloth between the dope and the rubber roll, and prevents the dope from getting on the rubber roll.

The machine shown in Fig. 5 is similar to that illustrated in Fig. 2, but has another tension roll and a knife of Type *D*. Depending on the fabric used, more or less tension must be applied to the cloth to cause it to pass under the knife without wrinkles or creases. It is always better to obtain this additional tension by using more bars than to depend on the brake which is attached to the let-off roll, as a more even pull is obtained on the cloth.

In Fig. 6 is represented a method of

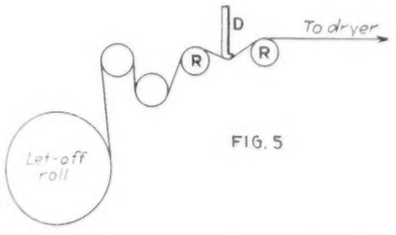


FIG. 5

coating at high speed. Roll *A* is 20 in. in diameter. This dips in the dope, which is kept at a constant level in the box *D*. The goods are passed from the let-off roll around guide rolls *BB* and around roll *A*. Knife *E* is in contact with the cloth and is held there by means of weights and levers. Roll *A* is driven. After leaving the knife, the cloth passes over a guide roll *C* and to the dryer. Knife *E* has a vertical and horizontal adjustment to govern the weight of coating. Knife *F* is a thin blade in contact with roll *A* and scrapes it clean on each turn.

High-Speed Machine

For coating both sides of a fabric in one operation, the equipment shown in Fig. 7 can be employed. This is used mainly for the finishing coats on fabrics that have been previously filled with starches or pyroxylin. Box *E* is kept filled with dope, so that roll *B* is always covered. The cloth passes from the let-off roll over guide roll *A*, around roll *B*, then over roll *C*. Knives *DD* clean the surface of the top and bottom of the cloth, which then passes into a dryer.

The cloth in process does not touch anything in the dryer until it is thoroughly dry. The tension in this case is kept uniform, and the amount of solids deposited on the fabric in one run is

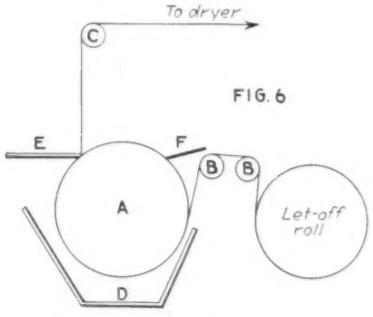


FIG. 6

governed by the amount of solids in the dope.

Means of Drying

Most of the methods used in drying fabrics as they come from the coating machines are simple. It is a question of evaporating the solvents in the dope. The temperature varies from 140 to 180° F. If too much heat is applied, a quick evaporation is obtained which may cause some moisture to be deposited on the surface, which is called blushing, or pinholes may be caused by the rapid exit of the solvents. The cloth can be dried in an open room over steam coils

COATING OF FABRICS with pyroxylin, viscose, cellulose acetate, synthetic resins, and other materials is becoming an increasingly important operation in textile finishing. In previous articles (TEXTILE WORLD, November, 1934, and July, 1936), Mr. Gibbons discussed the preparation and use of coating materials. The present article deals with the methods and equipment used in the application of coatings to sheetings, ducks, drills, twills, and other fabrics.

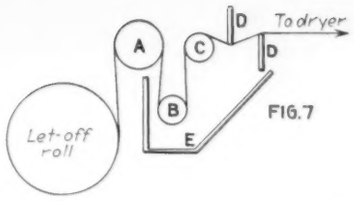


FIG. 7

or festooned in a hot room until dry. The most common method, however, is to pass the cloth through a heated box from 30 to 90 ft. long and wide enough to accommodate the width of the fabric. If the cloth is coated on both sides it must be carried through the box until dry without touching anything. If the fabric is coated only on the top side, it may be carried through the box on a moving carrier.

One of the methods used generally is illustrated in Fig. 8. Roll *B* is about 24 in. in diameter and from 48 to 84 in. wide. It is covered with rubber to give a better grip on the cloth, and is driven. For some types of work where several coats are applied to one side of the cloth in succession, the cloth is dropped on a conveyor after passing roll *B*, the conveyor being long enough so that the cloth arrives for the second run at the front of the machine just as the end of the cloth leaves the knife. This practice makes the operation continuous. For a simple coating job, the cloth passes through the dryer and is wound up on a shell at the end of the machine.

Safety Precautions

Since the solvents and many of the other materials used are inflammable or explosive, certain precautions must be used in the manufacture of coated materials. The gases must be exhausted from the drying box and the room, so that there is not enough vapor present to make an explosive mixture with the air. This is done by means of a driven fan. All motors must be vapor-proof and explosion-proof. The tools used should be made of brass to avoid sparks when they are used on metal, and the workmen's shoes should not have nails, which might strike a spark from the concrete floor. The room should be sprinkled, and a number of extinguishers should be handy and in readiness at all times. All the machines and moving parts should be thoroughly grounded. Only sufficient materials for the job at hand should be in the room at any time.

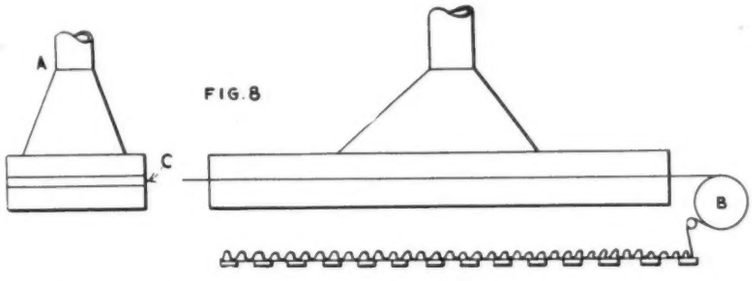


FIG. 8

LOWER DYEING COSTS

Can be secured through a bonus system—for foreman and workers

By S. A. Weart
MacDonald Bros., Inc., Boston

BECAUSE of the apparently infinite variety of conditions which directly affect labor cost, the dyehouse handling many different yarns or fabrics has long been a stumbling-block in the establishment of any form of cost-reduction or labor-control mechanism. Standards can, it is true, be set by the usual methods of time-study analysis; but the very great number of studies required in order to arrive at any standard in which confidence can be felt has precluded this method from being generally adopted. The net effect in most mills has been that the dyehouse has escaped the cost standards, wage-incentive, or other forms of labor control applied successfully in other departments, and has been permitted to operate as uncontrolled as twenty years ago. Such a condition is a reflection on the astuteness of managers of otherwise well-operated mills, and is all the more unfortunate because the very reason for lack of control—infinite variety of conditions—can be turned against itself to develop workable standards.

TABLE I. Cost-experience record for 8/2 cotton—direct dyed.

Lb. per Lot	No. Lots Made	Total Labor Cost	Av. Labor Cost per Lot	Av. Lb. per Lot	Av. Labor Cost per Lot
2.0	17	$22.11	$1.30		
2.5	5	7.55	1.51		
3.0	10	17.22	1.72		
4.0	12	22.89	1.91	4.0	$1.65
5.0	12	19.20	1.60		
6.0	9	17.04	1.89		
7.0	6	11.40	1.90		
8.0	7	15.56	2.22		
9.0	3	6.11	2.04	9.2	2.17
10.0	11	23.80	2.16		
11.0	2	5.66	2.83		
12.0	5	12.11	2.42		
13.0	10	19.41	1.94	13.3	2.45
14.0	4	10.59	2.65		
15.0	6	18.47	3.08		

Setting Standards

The cost of successively dyed lots, apparently identical in all respects, frequently—even usually—will have widely different labor costs because of conditions inherent in the art of dyeing over which no workman or foreman seems to have control. The batch-cost record of identical lots dyed by some one workman will vary so widely that any thought of setting a standard appears ridiculous; but when the records of identical lots for all workmen in the department are compared, it will be found that the differences begin to iron themselves out; when a greater number of lots is covered, a surprising degree of batch-cost regularity is found. Therefore, while the setting of a standard capable of serving as an individual wage-incentive basis for individual workmen paid weekly may appear at first glance entirely impractical, the setting of a standard to govern a foreman's bonus, paid monthly, or a group bonus applying to all workers, is entirely feasible. A worthwhile reduction in dyeing costs can be secured by making it financially and directly worth the foreman's or workers' while to reduce the expense of operation of the department.

The mechanism by which standards can be set, for example, for a foreman's bonus is merely a common-sense routine clerical analysis of past cost records, determining over a reasonably long period of time the actual labor costs per lot which have been experienced for identical materials dyed in the same manner (for example, machine or hand dyed). If the values thus obtained are plotted to show batch size versus labor cost per batch, a smooth curve can be drawn, which will satisfy all conditions. Points picked from this curve then become the standard labor cost per lot for the material in question. By multiplying all lots produced in any month at their standard labor costs as thus arrived at, one computes a standard payroll, which, by comparison with the actual payroll, will serve as a determinant of the amount of bonus to be paid the foreman. In practice, certain difficulties arise in setting standards, and there are pitfalls to be guarded against, which can best be noted by explaining the methods actually followed in a specific case.

In a dyehouse handling a wide range of yarns and piece goods an analysis was made which showed that, for all practical purposes, all batches could be classified as either hand or machine dyed, and that batches fell into definite poundage classes. Cost records for the last twelve months were analyzed and set up as shown in the first three columns of Table I, which is a partial cost record of one item, 8/2 cotton yarn, direct dyed. Similar tables were compiled for all other materials dyed. The average labor cost per lot was calculated for each size of lot, and more or less arbitrary groupings of various lot poundages were made at what superficially appeared to be the normal "breaking points" in lot costs. An abrupt change, for example, appears between the 7-lb. and 8-lb. lots in Table I, and again between the 10-lb. and 11-lb., and so on. The average pounds per lot, and average labor cost per lot, as shown in the fifth and sixth columns of the table, were computed for the poundage groups as thus arbitrarily determined, the whole object of this procedure being merely to reduce the number of points which must be plotted, so that the curve finally to be drawn would be a truer depiction of the various individual batch costs than would be the case if all points were plotted and the curve drawn solely by guesswork.

The points as above determined next were plotted as shown in the illustration, and a smooth curve most nearly satisfying all points was drawn; it will be found that all curves are, as might be expected, parabolic in character. The proper grouping of lot sizes had been previously set up, it will be recalled, so that it was a simple matter to pick the proper standard costs off the curve. The dotted line in the illustration shows, for example, that the standard labor cost for a batch in the 5- to 9.9-lb. range (an average of 7.5 lb.) is $2.02 per lot.

Accuracy Proved

To prove the accuracy of the standards, tabulations were made, of which an example for 8/2 cotton yarn, direct dyed, is given in Table II. Here the standards just determined were multiplied by the number of lots made during the last year of each poundage class, and thus the total standard labor cost was found. This was compared with the actual labor cost as shown in the accounting records; the variation of standard from actual was found to be 0.6%. Any variation less than 2.5%, either plus or minus, was considered to be sufficiently accurate for all practical purposes; but any variation in excess of this amount called for a replotting of the curve. As

a matter of fact, very few replottings were necessary.

After proving, the standards were set up in a table for ready reference, an extract of which for some of the cotton yarns is given in Table III. Attention is called to the notation at the top of the table that the standards are based on an average rate of $0.601 per man-hour, this figure having been obtained by a payroll analysis of the same year covered in the lot-cost studies. In using the table of standards, each month the number of batches of various sizes and materials were found from the production and cost records, and extended at the proper standard costs. In this way, there was determined a standard payroll for the department. To eliminate the effect of wage changes, the standard payroll was multiplied by a factor representing the percentage increase or decrease of the average departmental hourly rate as compared with the standard rate of $0.601; the result was the adjusted standard payroll.

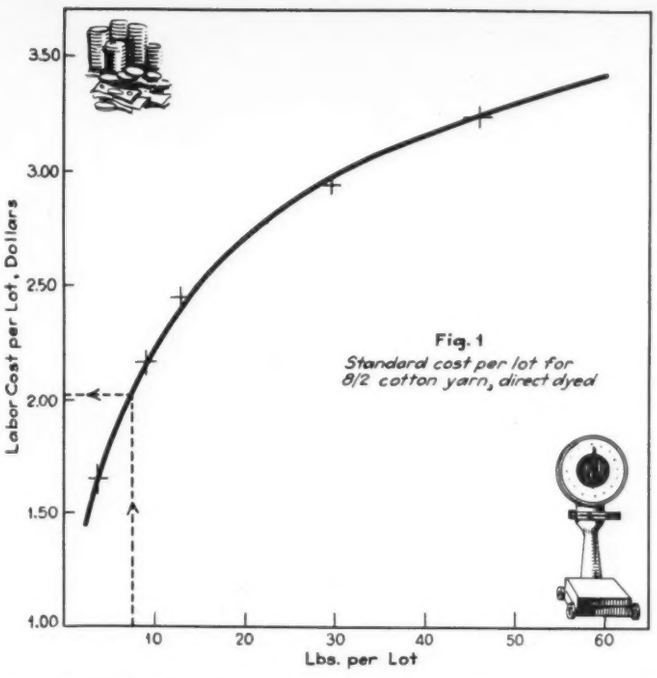


Fig. 1
Standard cost per lot for 8/2 cotton yarn, direct dyed

Computing the Bonus

A comparison of adjusted standard payroll with actual payroll furnishes the basis for computing the bonus due the foreman. In the dyehouse in question the foreman received an amount equal to $12.50 for each 1% that the actual payroll was less than standard payroll, on which basis the savings were shared nearly equally between the foreman and the management. The method of arriving at the above equation was simple. First, based on experience in a number of similar cases, and with a thorough knowledge of relative conditions in this particular dyehouse, it was felt not unreasonable to believe that a good foreman by close attention could reduce his then existing labor costs by 5 to 10%. For the potential maximum reduction of 10%, the management felt that a bonus of $125 per month would not be out of line, and hence $12.50 was paid each month for each 1% of cost reduction, the formula being as follows:

$$\text{Monthly bonus} = \$12.50 \left(\frac{\text{Standard} - \text{Actual Payroll}}{\text{Standard Payroll}}\right)$$

Application of the foregoing principles to payment of a bonus directly to the workers presents no problem. Standards are set exactly as outlined, and payment of the bonus to the workers is made by an identical type of formula. Distribution of the bonus among workers best is made pro-rata in accordance with acutal weekly or monthly earnings (on the theory that a constant percentage of increased wages should apply to the group); but under specialized conditions, other methods of distribution may be found more equitable. Generally speaking, a workers' bonus is most successful when the groups are restricted in size and confined to those employees who can cooperatively best influence one another's productive efforts. In those dyehouses with a large volume of repetitive work, an individual piecework or bonus system is of course applicable in many cases—the plan explained will be found better suited to more varied types of production. It may be mentioned that there is no reason why the plan will not work equally well for both foreman and workers at the same time.

Initial Trial Period

As is usual in starting a bonus plan, an initial trial period is necessary during which the foreman or workers are learning the mechanism of the system, and are convincing themselves that the standards are not unreasonably tight. Rarely is a bonus earned during the first month after placing the plan in effect, and frequently not for three or four months.

Once a bonus has been earned, however, it is earned in increasing amounts until the practically attainable maximum has been reached; thereafter, provided the standards are not so juggled by the management as to discourage the foreman or workmen, it is rare indeed not to have the bonus regularly earned. In plants where the wage-incentive system outlined above has been installed, marked benefits have resulted.

TABLE II. Proof of the standards for 8/2 cotton— direct dyed.

Lb. per Lot	Standard Cost per Lot	No. Lots Made	Total Standard Labor Cost
2.0–4.9	$1.59	44	$69.96
5.0–9.9	2.02	37	74.74
10.0–14.9	2.38	32	76.16
15.0–19.9	2.61	20	52.20
20.0–29.9	2.86	22	62.92
30.0–39.9	3.07	6	18.42
40.0–49.9	3.22	2	6.44
50.0–60.0	3.35	16	53.60
Total			$414.44
Actual labor cost same period			$417.01
Percent standard under actual			0.6%

TABLE III. Standard labor cost per lot—Basis: Average hourly rate $0.601.

Material	Size of Lot in Lb. 2.0–4.9	5.0–9.9	10.0–14.9	15.0–19.9	20.0–29.9	30.0–39.9	40.0–49.9	50.0–60.0
Direct:								
8/2 Cotton Yarn	$1.59	$2.02	$2.38	$2.61	$2.86	$3.07	$3.22	$3.35
8/4 Cotton Yarn	1.55	2.00	2.40	2.58	2.79	3.01	3.25	3.40
10/3 Cotton Yarn	1.45	1.90	2.29	2.45	2.64	2.83	3.06	3.20
20/2 Cotton Yarn	1.50	1.95	2.31	2.62	2.90	3.02	3.21	3.37
Indanthrene:								
8/2 Cotton Yarn	2.40	2.75	3.20	3.70	4.62	5.02	5.65	6.23
8/4 Cotton Yarn	2.29	2.61	3.15	3.70	4.59	4.91	5.57	6.20
10/3 Cotton Yarn	2.11	2.57	3.05	3.58	4.37	4.76	5.49	6.00
20/2 Cotton Yarn	1.90	2.25	2.93	3.23	4.25	4.59	5.32	5.91

DEATH TO THE MOTH!

Advances in chemistry spell doom of this pest

TO THE ENTOMOLOGIST, the clothes moth is an interesting creature. Its life cycle is particularly intriguing. The female of the species has a poorly developed mouth and no digestive organs; hence she cannot eat; she has wings, but she seldom flies; her one aim is to lay eggs and then to die. Eggs so small they are invisible to the naked eye; so hardy that freezing does not harm them. Then come the larvae (worms to you and me); they have no sense of sight, seeing, or smell; they cannot reason. But how they eat! From birth to maturity they consume 2,700 times their own weight. And they are very finicky about their food. They refuse to eat vegetable fibers; prefer raw wool to finished fabrics; undyed wool, to that which has been dyed.

To the housewife, the clothes moth—and along with it, the carpet beetle—is just a pest. Vainly, your wife and mine chase the fluttering male moth miller, who of himself can do no harm, but is merely a danger signal, a sign warning that deep down in the pile of the garments hanging in the closet or of the rugs upon the floor are eggs waiting to be hatched into worms—worms which will eat holes; enough holes to cause damage amounting to $100,000,000 annually in this country.

Why doesn't some one do something about this pest?

The answer is that someone is doing something. Thanks to the chemist, it is possible today to purchase rugs, upholstery, and garments immune to the ravages of the moth.

WELL over a thousand mothproofing materials have been patented. A half dozen or so of those now commercially available are being used effectively in the textile industry.

Four years ago in these pages, we listed the properties which most authorities agree upon as being necessary in a mothproofing compound. Owing to the increased interest of the textile mills in mothproofing, it is worth while to repeat those requisites. They are:

1. It must repel clothes moths or render the fibers proof against moth grubs.
2. It must be permanent in its effect.
3. It must not injure the physical properties of the fiber.
4. It must not affect the color of white fibers or the shade or degree of fastness of any dyes already on the fiber.
5. It must be odorless.
6. It must not dust off.
7. It must be non-poisonous to human beings and must not have any irritating action on the skin.
8. It must be capable of simple and uniform application.
9. It must be available commercially at a reasonable cost.

Mothproofing compounds meeting all these requirements can be obtained today; and the textile mill should insist on receiving them.

In the article referred to above, we called attention to the fact that only a small percentage of wool goods and other materials subject to the depredations of the clothes moth and other insects was treated to prevent this loss. We pointed out also that there was an opportunity for the alert textile manufacturer to place himself in a position to supply mothproofed fabrics and to awaken the latent consumer demand for them. We are happy to report that since that was written several textile manufacturers have done that very thing, and that the percentage of mothproofed fabrics is much greater today.

Use of mothproofing compounds began to increase rapidly in 1933 and has continued to gain since then. Today, for example, practically 100% of the mohair upholstery produced by leading manufacturers is mothproofed. Mothproofing materials are being applied also to a large percentage of rugs, carpets, and blankets. As yet, manufacturers of clothing fabrics, knitwear, and knitting yarns have not generally adopted the use of mothproofing compounds; but doubtless in the near future the process will be extended to include many of these materials.

One of the reasons why we have singled out mothproofing for particular attention in this issue is the fact that it presents an excellent example of the way in which a special finish obtained by use of the newer chemicals recently made available to the industry can be successfully merchandised. A real problem which confronts any company which develops a new finish is that of impressing the consumer with the merits of this finish, making her realize that these advantages are bona-fide; and justifying to her the additional initial cost of fabrics bearing this finish.

Manufacturers of mothproofed fabrics have attacked the first and the last parts of this problem by extensive advertising in trade and consumer publications. The second part they have solved by giving a written guarantee, or even an insurance policy, indemnifying the purchaser against loss if by any chance damage due to moths does occur within a five-year period.

These methods which have been employed to such good advantage in popularizing certain classes of mothproofed materials can readily be adapted to the merchandising of many of the other new finishes which are being developed to increase the beauty and serviceability of textiles.

Meanwhile the fight against the clothes moth continues.

A few years more and this pest will no longer bother the housewife. Even the entomologist will lose his interest in the creature. Chemistry has doomed the moth.

Experience of a few mills proves

PROFITS ARE POSSIBLE

in the job finishing industry

MUCH has been written about the factors which are responsible for the lack of profits in the finishing industry as a whole. Less has been said about those few plants which—in spite of all adverse conditions—have made a profit year in and year out all through the depression. Without exception, these plants have been well managed. And this writer believes—although he knows his opinion will be vigorously challenged—that 95% of all the finishing companies could have made a profit if they had been equally well managed.

Observation and study over a considerable period of years of many plants have shown the differences in management between those plants which are making a profit and those which are not. From these observations, certain specific recommendations can be given as to changes which the individual finisher can institute to make his plant a more efficient operating unit. They are:

1. Executives chosen should be men of ability, trained in every department of the plant.
2. An adequate cost system should be established.
3. A chemical staff should be maintained of sufficient size to control operations and with sufficient ability to take advantage of the new developments in industry.
4. Rigid economy should be exercised in the purchase of dyes, chemicals, and other materials.
5. The operating staff, including office workers, should be cut to the lowest possible level commensurate with the highest plant efficiency.
6. Equipment should be kept in good operating condition.

The Keystone

The man in active charge of the plant and its operation—whether he be the president, treasurer, or manager—is the keystone of the organization. It makes little difference whether he is a college graduate or a man who has risen from the ranks, so long as he is a keen, clear thinker, with a thorough knowledge of the various operations. He may or may not be a "good fellow"; but he must have the respect and confidence of his subordinates; and he must be a leader.

When trouble occurs, he goes to the bottom of the matter, finds out what caused the difficulty, and takes steps to see that the same trouble does not come up again. He does not sit in his office all the time, but gets out in the plant and knows what is going on in every department. Through conferences, and in other ways, he builds up the knowledge of his staff. He does not arrive at the plant at 9:30 in the morning and leave at 4 in the afternoon. His mind is open to new ideas and new methods.

In the great majority of finishing plants no particular attention is paid to the training of superintendents and other operating executives. If a man has been a good folding-room foreman or a good boss dyer, he is promoted to be a superintendent. The chances are that he has always worked in a folding room or a dyehouse, and knows little or nothing about the workings of the other departments. A few plants have taken carefully selected men, placed them in one department for a period long enough to acquaint them with its operation, then moved them along to another department, and so on until they have worked in each department. In those mills where this method of training men for responsible positions has been followed for several years it has given very satisfactory results.

Adequate Cost System

The advantages of an adequate cost system are too well known to need repetition. But a cost system is useless if it does not give accurate information, and cost figures furnished by the foremen may be far from accurate. Standard costs should be established by having an experienced observer follow a few lots of each construction and finish through each department; yet very few plants do this.

In the well-managed mill, the stockroom issues materials only against a particular lot, and there is a check on the amount of materials used.

Pages could be devoted to the value of a competent chemical staff; but suffice it to say that in most plants the chemist would more than earn his keep through the savings he could effect in the purchase and use of dyes and chemicals alone.

The manager keeps a tight grip on the purse strings; nothing is purchased without his O.K. If the plant is large, he has a purchasing agent who buys all necessary and no unnecessary supplies and equipment. There are no big automobiles maintained at the company's expense for use of department managers and salesmen.

Expensive Luxuries

Again, there are no superfluous employees in the profit-making plant. Too many foremen, machine operators, bookkeepers, and clerks are expensive luxuries. The question of time studies and bonus systems is too big a one to be debated here. There is no doubt, however, that a time study is the only real way to determine how much can be produced most efficiently by a given machine in a given time. Time studies show waste of time and materials which can be prevented.

Bonus systems, on the other hand, have their advantages and their disadvantages, but in plants where they have been installed and then modified to meet the requirements of that particular plant, they usually are beneficial.

It is unnecessary to elaborate on the necessity of keeping machinery in good condition. When repairs are necessary, they should be made quickly but well. A stopped machine pays no dividends.

Many finishers are waiting for another general boom in business, or for natural laws to eliminate the weaker plants, or for some organization to buy up and scrap surplus mills and equipment. A few are proving that, even under present conditions, efficient management makes profits possible.

ONE THING on which everybody agrees is that something is wrong with the job finishing industry. There is little agreement, however, as to what can be done about it. In the accompanying article a man who has been intimately connected with the industry for many years, but who prefers to remain anonymous, gives his ideas as to the steps which must be taken if the individual plant is to make a profit under present conditions. While his opinions and ours do not entirely concur, we do feel that his recommendations are well worth consideration.—*Editor*.

New buildings, new equipment, new power plants show present trends in

FINISHING-PLANT MODERNIZATION

REALIZING the advantages which up-to-date buildings and equipment give to any company, textile finishers, at the first tangible sign of business recovery, began to modernize their plants. The story of what they have done is perhaps the biggest news of the year in the finishing industry. While the preponderance of new construction has been in the South, several noteworthy projects have been completed or are now under way in the North. Few new buildings have been erected in the silk finishing division, but many plants have installed modern equipment. Following examples of modernization in the finishing industry are only a few of those which could be given. They are sufficient in number, however, to indicate the present trends and to show that leaders in the industry are losing no time in revamping their mills to meet present-day conditions.

Belle Knitting Corp. Erects Model Dyehouse and Boiler Plant

By S. B. Lincoln
Lockwood Greene Engineers, Inc.

DURING the fall of 1935 Belle Knitting Corp., manufacturers of knitted rayon cloth and rayon underwear, then operating in leased space at Lebanon, Pa., made arrangements to acquire through the medium of Valley Industries (a corporation formed locally at Sayre, Pa.) the plant at Sayre, built by Foreman & Clark, of Chicago, and formerly used by them for the manufacture of men's clothing. This plant, constructed in 1928, had approximately 90,000 sq. ft. of floor space. In order to adapt this to the needs of Belle Knitting Corp., it was necessary to build a three-story extension, adding approximately 22,000 sq. ft. of floor space. It was also necessary to construct a dyehouse building and to replace entirely the boiler plant equipment.

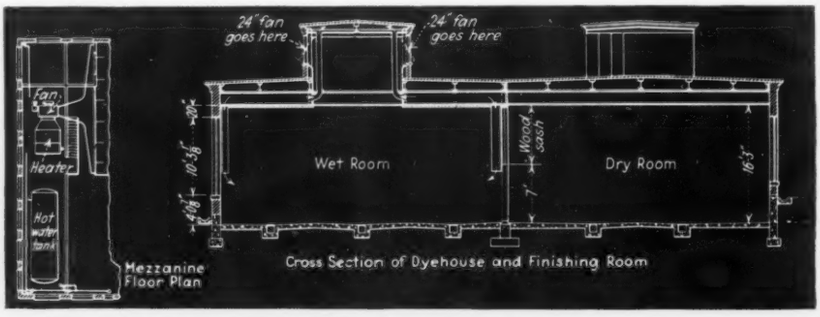
The main building extension was of steel framing with plank and maple floors, and was constructed with a sawtooth skylight roof over the top floor, which, together with one wing of the original building, facing north, provided space for the Wildman Knitting department and for the stitching department, with over 500 operatives.

Boiler Plant

The original boiler plant consisted of two 100-hp. horizontal return tubular boilers, connected into a radial brick chimney. These boilers were hand fired, and while entirely adequate for the heating of the original buildings with some reserve capacity, were entirely inadequate to take the peak loads imposed by a dyehouse. The stack also was of insufficient capacity and had to be torn down, and a new steel stack of ample capacity was erected on the old foundation.

Space in the original boiler room was somewhat limited, but as the building was of fireproof construction and centrally located to serve the plant, it was desirable to find a way to install sufficient capacity in the space vacated to take care of new requirements. This problem was met by the installation of two 225-hp. water-tube boilers of a new design manufactured by E. Keeler Co., Williamsport, Pa.

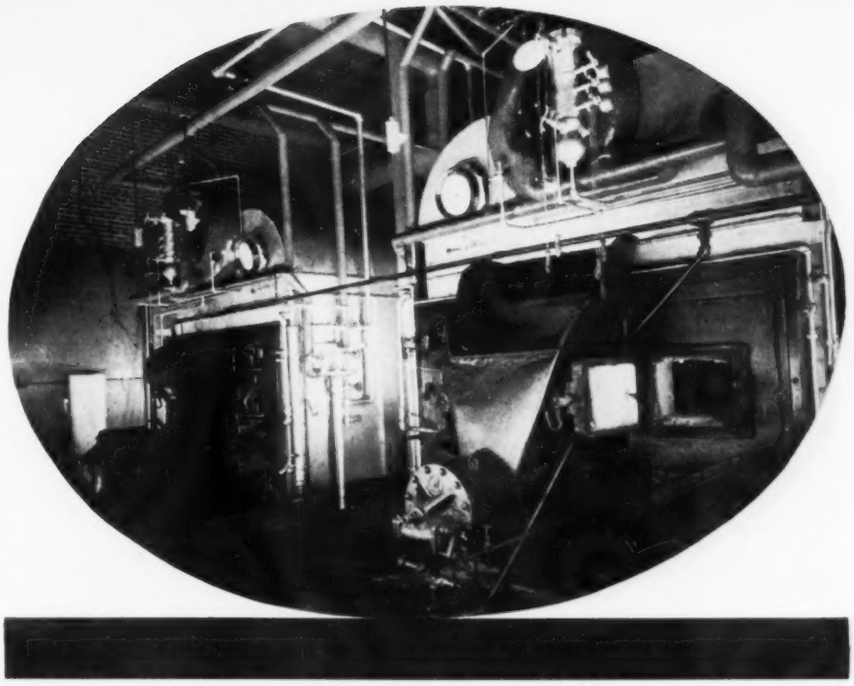
These boilers, known as the C. P. (Century of Progress) type, are equipped with Westinghouse engine-driven stokers, with forced-draft fans and are capable of operating at 200% of rating, thus providing a peak capac-



Note double-ceiling construction designed to reduce fog in dyehouse at Belle Knitting

ty of 900 boiler horsepower. The boilers have water-wall construction around the furnaces, and are entirely inclosed with sheet-steel casing surrounding rock-wool insulation 4-in. thick. The only brickwork is lining of the furnace fronts and bridge walls.

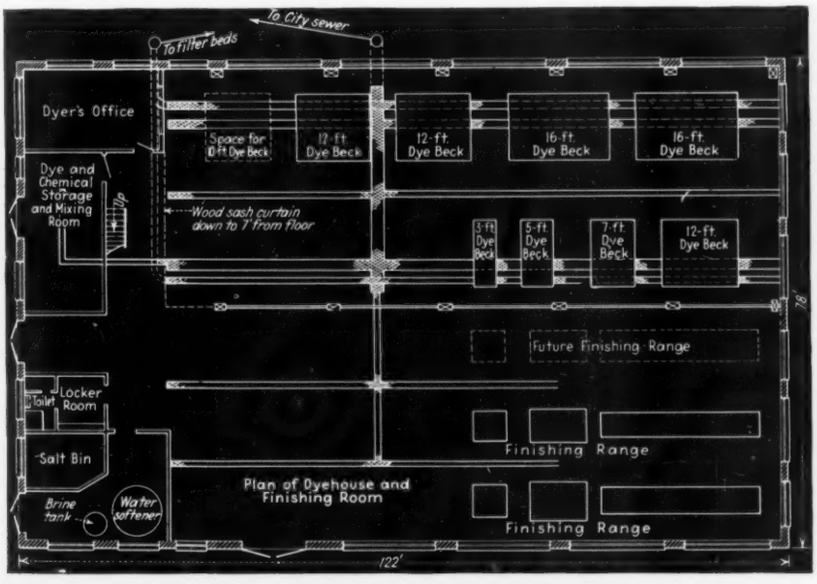
Boilers of this type in performance tests have shown a high efficiency, and the cost of these units compares favorably with that of horizontal return tubular boilers with brick settings. The space requirements for these boilers were much less, and it is believed that not only will the efficiency be higher, but there should be a decided saving in maintenance costs on account of getting rid of brick settings.



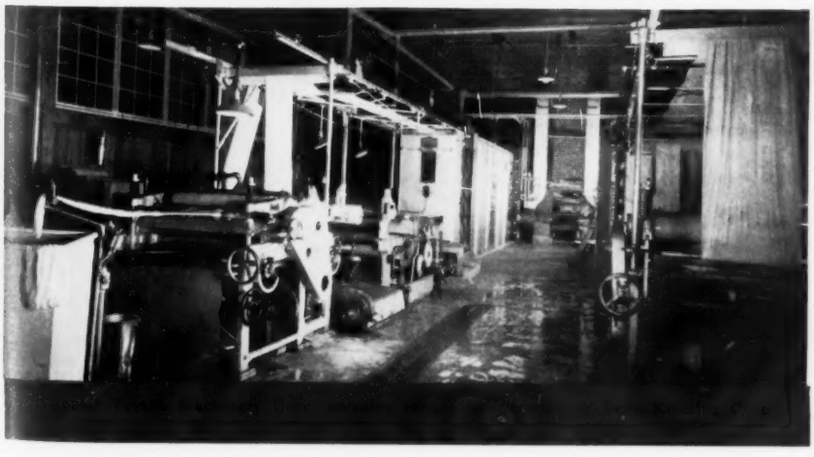
Dyehouse Features

A totally new dyehouse was required to provide capacity for dyeing and finishing of 16,000 to 20,000 lb. of knitted rayon cloth in 16 to 20 hr. The building provided has several novel and interesting features. It is of one-story construction, approximately 78 ft. in width, with a longitudinal partition separating the building into two parts. On each side of the partition, roof girders span the entire width, so that there are no interior columns on either side. On one side of the partition all wet work is located and on the opposite side the drying and finishing ranges are erected.

Across one end of the building where main entrance and exit doors are located, space has been provided for auxiliary departments, including water softener, locker room and toilets, storage and mixing of dyes and chemicals, and dyer's office. Across the same end of the building and directly over these departments is located a mezzanine floor, on which is located a hot-water storage tank and the heater coils and fan for the ventilating and heating system.



Unusual drainage system is a feature of the Belle Knitting Corp. dyehouse.



Unusual Roof Construction

The roof construction over the wet room is somewhat unusual, as a false ceiling is provided under the steel roof framing, both for the main ceiling and the monitor ceiling. This provides a hollow space over the entire room, and warm air from the fan system is blown into this space and then introduced into the room by a series of drop ducts located along each side of the room. By this method, a warm ceiling can be maintained at all times, providing freedom from dripping and also preventing rotting of the main roof planks.

In a room of this kind, with a large number of open dye kettles boiling continuously, it is practically impossible at any reasonable cost to keep the room entirely free from fog; but the ventilating system installed here with a positive air supply under pressure and adequate exhaust fans does keep the fog above the breathing line, and keeps the room entirely free from fog when only part of the machines are in operation.

The fan is provided with variable-speed control and can be operated at any one of a number of speeds. The heating coils are under thermostatic control, and the temperature of air supplied to the ceiling space may be set according to any predetermined temperature. Provision for the removal of air and steam from the room is by

Section of the plant of Franklin Rayon Corp., Providence, R. I.

means of an overhead monitor running the entire length of the wet room. This is provided with pivoted sash, mechanically operated, all sash construction being of Wolmanized lumber. In addition to the natural ventilating effect secured by the monitor, a series of disk fans, motor operated, have been installed on each side of the monitor. These are controlled from the floor and are operated when the dyehouse is running.

Monitor sash are open during warm weather and closed during cold weather. Side wall windows are of standard factory steel sash and are opened in summer and kept closed in winter.

Drainage System

Floor drainage in the wet room is provided by means of floor trenches with cast-iron curbs and cast-iron grating covers. One interesting feature of the drainage is the use of a double drainage system with two sets of trenches under each dye beck. Water used for rinsing and washing may be discharged direct to the city sewer without treatment, while baths used for boil-off or containing a high percentage of dye material are taken into a separate trench system and to filter beds before being discharged to the river. Each dye beck is equipped with double drain plugs, one set for each trench system.

The peak load on the boilers is cut down by the use of a large steel storage tank for warm water fully insulated and located on the mezzanine floor.

The dry-room section of the building is separated from the wet room by means of wood sash partition extending down from the ceiling to a height 7 ft. from the floor. It was originally intended to have the space below this remain open, but the owners have temporarily closed it with sheathing. The dry-room section is not provided with a double ceiling, but has a ventilating monitor the same as the wet-room section.

The water-supply system includes a Permutit single-valve Zeolite softener, having a capacity of 400 gal. per min. All hot water piping is of red brass pipe. All cold water piping is located in floor trenches below the dye becks so that the risers from the floor to the top of the dye becks are the only cold water pipes above the floor line. This avoids all dripping from cold water lines. Hot-water lines and steam lines are located directly above the front end of the dye becks with straight drop pipes for connections.

Dyeing and Finishing Equipment

Dye becks were furnished by H. W. Butterworth & Sons Co., Philadelphia; they are in general of wood construction. Several of the smaller units are lined with stainless steel and all machines are equipped with stainless steel reels. All machines have individual motor drives. Finishing ranges are those of the Tubular Textile Machinery Co., New York, two ranges being installed now, with space for a third to be installed later.

The design of building extensions, boiler-plant changes, dyehouse building, and its mechanical equipment, together with supervision of construction, was under the direction of Lockwood Greene Engineers, Inc. Construction was completed during the early fall and winter of 1935-36 and operations were started in the new plant during the first part of the year 1936.

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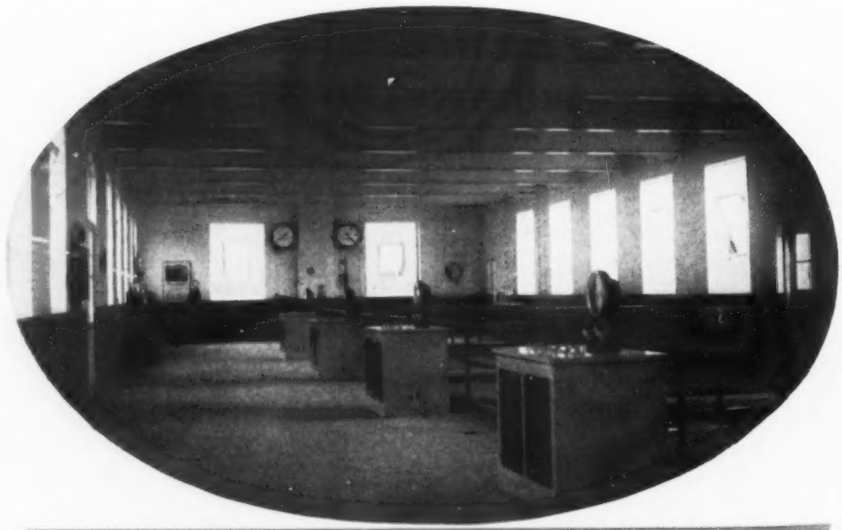
Proximity Revamps Print Works and Bleachery; New Filtration Plant

IN line with its general policy of producing better finishing with fewer seconds, Proximity Print Works, (owned and operated by Proximity Mfg. Co.) Greensboro, N. C., will soon complete one of the outstanding modernization programs of its kind in the South. Design, construction, and installation are being handled by J. E. Sirrine & Co., Greenville, S. C.

The bleachery has been completely revamped and the latest type of equipment and processes have been introduced. A modern mercerizing range, complete with recuperator and caustic-reclaiming equipment, has been installed. The dyeing department has been brought up to date throughout and the newest type of jigs have been purchased. A continuous vat-dyeing range has been set up. Additional printing machines and agers are being installed in the printing department.

A modern gravity filtration plant and



Operating floor in water-treatment plant installed by Proximity Mfg. Co.

omplete water-treatment system is being completed as shown in the accompanying photographs. The filter plant, now in operation, is of the latest design and is equipped with Wheeler bottoms, which eliminate the use of metal in the filter beds. It was furnished by Robert Filter Mfg. Co., Darby, Pa. Hydraulically operated valves and modern operating tables are used in the layout of the plant. Semi-automatic control throughout simplifies operation and makes it easier on the operatives. R. D. Cole Mfg. Co. supplied the water tanks.

A three-story, brick-and-concrete chemical manufacturing plant recently was constructed to produce certain of the compounds used in finishing and in the preparation of warp sizes for consumption in the various mills owned and operated by Proximity Mfg. Co. Chemicals used as raw materials for these

Wash-water tank used in conjunction with Proximity's filtration plant.

compounds are purchased in tank-car lots and stored in new storage tanks.

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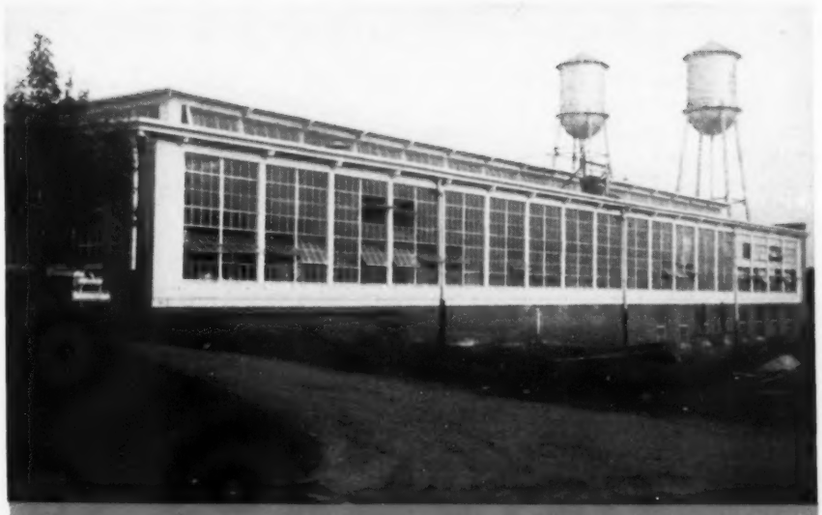
Franklin Rayon Continues Expansion of Facilities

FRANKLIN RAYON CORP., Providence, R. I., was started as the Special Yarns Corp. in 1924. Today the concern employs over 800 and is the largest dyer of rayon yarns in the world. Each year there has been some expansion in floor space, both through the aquisition of existing buildings that were adjacent and through new construction. The most recent addition was a three-story and basement building, 100x160 ft., costing $65,000. A. F. Smiley Construction Co., Pawtucket, R. I., was the general contractor.

Starting with the old hand tub, Franklin has changed its equipment year after year as more efficient methods of handling rayon have been developed.



Recent addition to plant of North Carolina Finishing Co. houses new rayon and acetate finishing equipment.

At present the company is rapidly expanding its facilities for dyeing in package form. Package dyeing was little used even five years ago, except as more-or-less a last-resort method of dyeing fine numbers, such as 50 denier. Today the various problems in connection with package dyeing have been ironed out, and by the first of next year Franklin will have a capacity of 100,000 lb. per week by this method alone.

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North Carolina Finishing Co. Expands Buildings

NORTH CAROLINA FINISHING CO., located on the Yadkin River near Salisbury, N. C., has experienced a steady growth since its beginning in 1916 as Yadkin Finishing Co., a small plant which finished damasks only. The Erlanger interests took it over in 1919, and, since that time, the company has expanded steadily, adding from time to time equipment for bleaching, mercerizing, dyeing and finishing. Fabrics up to 100 in. in width are handled in the main part of the plant, with special emphasis being placed on shirtings and wide sheetings.

In the summer of 1935, a modern power plant was built. This is a pulverized-fuel unit made by Combustion Engineering Corp., operating at 450-lb. boiler pressure. Steam used for processing is first passed through a turbine connected to a generator so that the full value of the steam is utilized. J. E. Sirrine & Co., Greenville, S. C., handled the engineering work on this steam plant, and have furnished engineering services for seventeen years.

The North Carolina Fabrics Corp., located on the same property, was organized in 1935. This plant has modern equipment to dye and finish wide rayon and acetate fabrics including wide box-loom dress goods, crepes, and flat staples. At the present writing, foundations are being laid for a building to house additional rayon finishing machinery.

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Southern Mercerizing Co. Adds New Warp Range

EARLY in 1936, F. P. Bacon, of Southern Mercerizing Co., Tyron, N. C., sold his interest in the firm to China Grove (N. C.) Cotton Mills Co., and retired. W. C. Ward, owner of 50% of the stock, retained his interests and remained with the organization as treasurer and plant manager. John H. Rutledge, treasurer of China Grove, became president of the reorganized company, and paid-in capital was raised from $100,000 to $200,000.

Shortly after this change took place, a Butterworth warp-mercerizing range was installed, along with considerable other equipment. The machine has a capacity production of 75,000 lb. of yarn per week on two 40-hr. shifts, or a total annual capacity of nearly 4,000,000 lb. of warp yarn. Three 24-pole Smith-Drum skein-mercerizing machines, which have been in operation for some time, will of course continue to turn out this type work, capacity production being about 1,200,000 lb. annually.

Other equipment installed includes five 3½-gage, 378-spindle Whitin quillers, four new 102-Model winders, and

considerable new unwinding and splitting equipment. Five more Whitin quillers will be put in shortly, and all 30-Model winders will be replaced with 102-Models as soon as is feasible.

Present plans are to construct a new 100x100 ft., two-story brick building to house a part of the new machinery and additional machinery which will be purchased to balance production. Certain old buildings will be torn down, the grounds landscaped, and some 60 cottages in the village will be repaired and repainted.

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Union Bleachery's New Filtration Plant

UNION BLEACHERY, Greenville, S. C., is a plant which has progressively kept abreast of all modern developments in finishing. The latest step, designed to increase efficiency and improve quality, is the addition of a new concrete gravity filtration plant and water-purification system.

The filter plant, furnished by Roberts Filter Mfg. Co., is of the most modern design and has a daily capacity of 4,500,000 gal. of filtered water. Equipment includes automatic wash-rate controllers and hydraulic valves controlled from operating tables located on the second floor of the filter house, and a complete laboratory. Component parts of the plant consist of a new two-story filter house, a concrete mixing chamber, a three-unit coagulation and sedimentation basin, a wash-water tank erected by R. D. Cole Mfg. Co., and five concrete filter beds designed for high-velocity washing. The water, after leaving the filters, is treated for correction of pH value, aerated, and stored in a 2,000,000-gal. concrete clear-water storage basin. J. E. Sirrine & Co., Greenville, were the engineers.

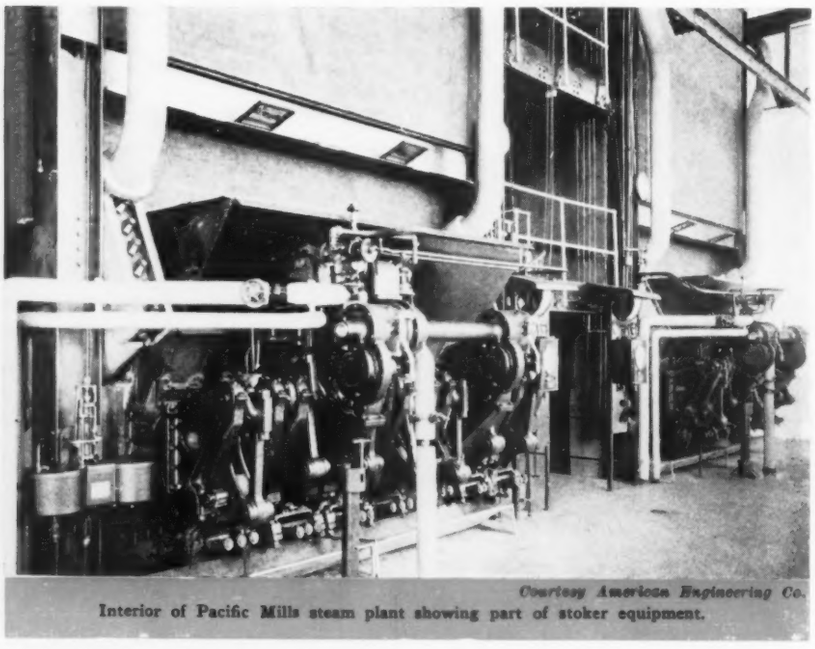
Interlaken Modernizes Power Plant at Arkwright Finishing Unit

ONE of the outstanding modernization jobs in New England has been the complete revamping of the electrical equipment and power plant of the Arkwright Finishing Co. plant of Interlaken Mills, at Fiskeville, R. I. The plant was formerly operated with the old-type steam engine and mechanical drives. Under the new set-up, electricity is generated and fed to the various driving motors. The old boilers have been replaced with the modern, high-pressure type, and a turbo-generator has been installed. The exhaust from the turbo-generator serves as process steam in the various dyeing and finishing operations, and the electric power is thus somewhat in the nature of a byproduct.

The Harris Mill of the same company, where spinning and weaving is done, is located 3,000 ft. downstream from the finishing plant, and a three-conductor cable of 750,000 circular mils was run down the bottom of the canal to connect the two mills. The Harris Mill is connected also with the local power company. With this hook-up, if the finishing plant is generating an excess of power it flows to the weaving mill, where it is either used or passed on into the lines of the public utility. The process is reversed when the electrical demands of the plants exceed the capacity of the generator.

Front view of new Union Bleachery filter house.

John A. Stevens Co., Lowell, Mass., is handling the engineering.



Courtesy American Engineering Co.

Interior of Pacific Mills steam plant showing part of stoker equipment.

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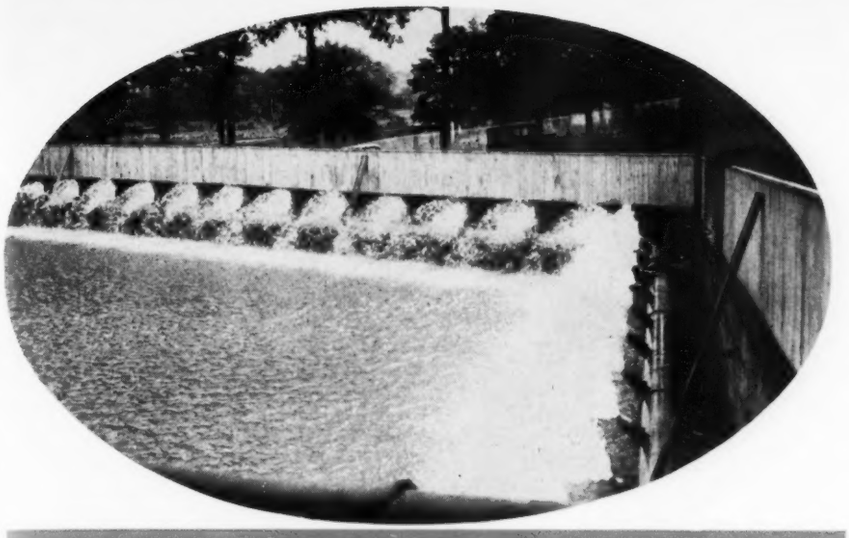
Stonecutter Adds Plant for Fine Synthetics

STONECUTTER MILLS CO., Spindale, N. C., has just completed and put into operation a new division for dyeing and finishing fine synthetic dress goods and linings. The new department, which is housed in a modern building, adjacent to the weave shed, contains about 33,000 sq.ft. additional floor space. Arrangement of the buildings and disposition of the machinery were planned to permit the routing of goods as economically as possible. The plant is equipped with the latest-type of dyeing and finishing machinery. Dyeing machines are of stainless steel. Creping, boil-off and drying apparatus are of special design. Processes will be controlled by a trained technical staff with a well-equipped laboratory. Capacity production is about 200 pieces of fine fabrics per shift. About 100 persons will be employed to operate the new plant.



Aeration equipment and clear-water storage basin at Union Bleachery.

Industrial Cotton Mills Installs New Steam Plant

A NEW steam plant has been constructed at Industrial Cotton Mills Co., Inc., Rock Hill, S. C., to generate power for the operation of the gray-goods mill and dye house. Exhaust steam from the turbine is used in the various dyeing, ageing, drying, and finishing machines in the dyehouse. A modern water-treating plant has been installed to furnish water with the proper composition for the new high-pressure boilers and for process work. A cloth room and storage building are under construction. J. E. Sirrine & Co., Greenville, S. C., are the engineers in charge of this work. Filter-plant equipment was furnished by Roberts Filter Mfg. Co.; water tanks, by R. D. Cole.

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Pacific Mills Doubles Steam Output at Lyman; Revamps Finishing Plant.

AN interesting steam-plant expansion featured the modernization program of Pacific Mills, Lyman, S. C. Two 768-hp. boilers and complementary equipment were added to the four 400-hp. boilers already in operation, practically doubling the output of steam used in processing. None of this steam is used to generate electricity, as all machinery is operated with purchased power. The necessity for additional steam was brought about by the gradual growth of the mill itself.

The new boilers were made by Babcock & Wilcox, and are of the Sterling, water-tube, single-pass baffle type. They operate under 250-lb. working pressure, and have Bailey furnace bridge and side walls (water walls). Two Sturtevant Turbovane fans are located in front of the furnaces for forced-draft purposes, one fan being driven by a 100-hp. steam turbine and the other by a similar sized motor.

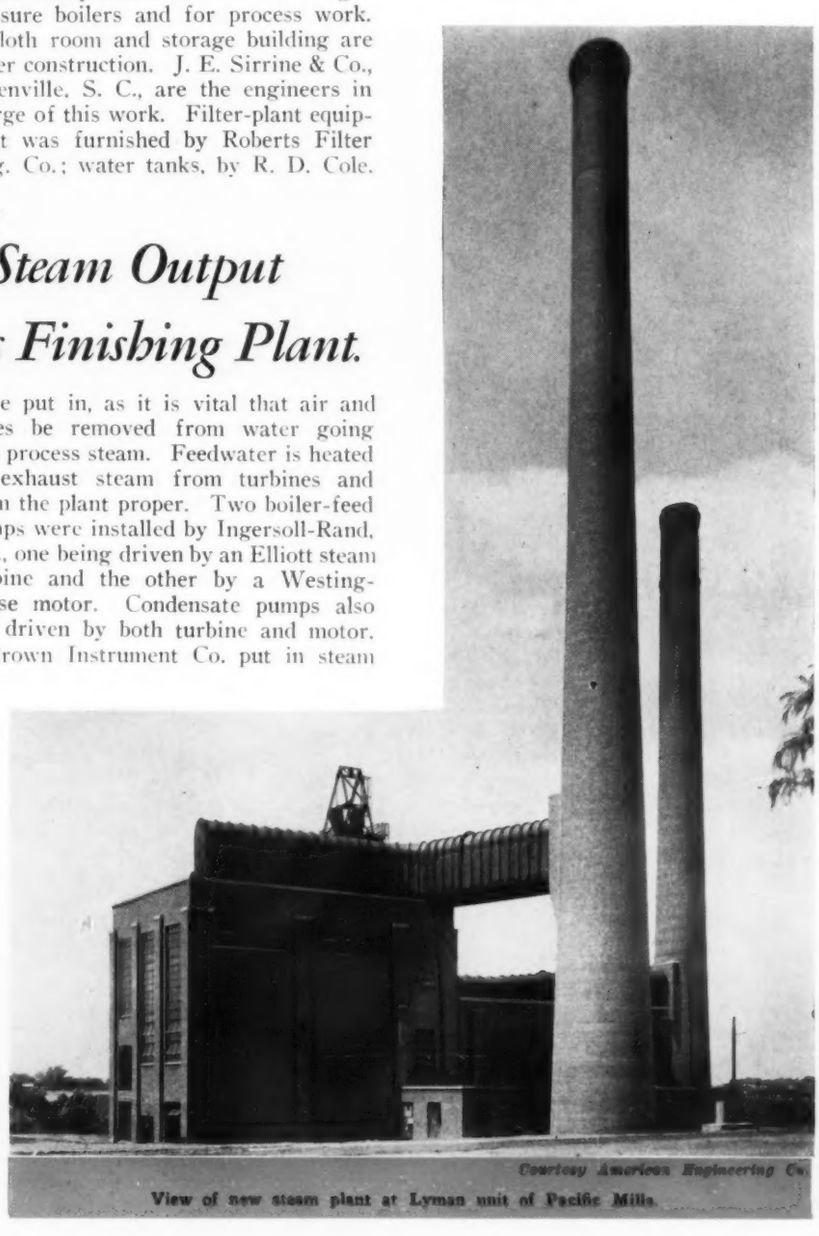
Coal-handling equipment was furnished by Fairfield Engineering Co., and consists of yard hopper, skip-hoist, coal tank, coal larries, and an ash hunker. American Engineering Co. installed two 7-retort straightline-drive crusher stokers.

Elliott deaerating feedwater heaters with a capacity of 180,000 lb. per hr. were put in, as it is vital that air and gases be removed from water going into process steam. Feedwater is heated by exhaust steam from turbines and from the plant proper. Two boiler-feed pumps were installed by Ingersoll-Rand, Inc., one being driven by an Elliott steam turbine and the other by a Westinghouse motor. Condensate pumps also are driven by both turbine and motor.

Brown Instrument Co. put in steam flowmeters throughout the finishing plant to check on the amount of steam going to various departments. In the boiler room, Bailey steamflow, air-flow, and gas temperature boiler meters were installed, along with three-point draft gages. These devices are so constructed that it is unnecessary to have CO_2 indicators. Combustion-control equipment was furnished by Hagan.

The new steam equipment is housed in a 50x75 ft. brick-and-steel building with a steel-truss supporting roof. Alphons Custodis Chimney Construction Co. put up 225-ft. stack with a 10-ft. top diameter.

Aside from the new steam plant, the company during recent years has installed additional printing machines, agers, new soapers, dyeing machines, tenter ranges, and other finishing machinery. The bleachery building was enlarged, machinery was rearranged, and the bleaching process changed somewhat. Lockwood Greene Engineers,



Courtesy American Engineering Co.

View of new steam plant at Lyman unit of Pacific Mills.

Thies Dyeing Mills, Inc., is constructing a new addition to the plant at Centerville, Rhode Island.

Inc., handled all engineering work in connection with the modernization and revamping program.

Appleton Co. Builds New Bleachery at Anderson

APPLETON CO., Anderson, S. C., in 1934 completed construction of a new bleachery and dyehouse. The building is one story in height and of daylight construction. Machinery from the old bleachery was completely revamped and supplemented with new equipment. New bleaching processes were introduced. A few months earlier, a battery of high-pressure boilers and a steam turbine were installed in the power plant. This plant produces power for the operation of the gray-goods mill and bleachery, and exhaust steam from the turbines is utilized in the bleachery. J. E. Sirrine & Co., Greenville, S. C., handled the engineering work.

Rock Hill Printing & Finishing Co., as it appears from the air; recent expansions are indicated within the oval.

Rock Hill Adds New Buildings to Reorganize Bleach House

ROCK HILL PRINTING & FINISHING CO., Rock Hill, S. C., has grown in eight years from a small establishment employing about 400 persons, to a modern bleaching, printing, and finishing plant, employing some 1,600 persons. The annual payroll has increased from about $400,000 to $1,500,000. A large part of this expansion has taken place recently.

Within the last two or three years, three new units have been added to the plant as indicated in the airplane photograph on this page. These were, respectively, a two-story addition, 75x200-ft.; another two-story building, 100x300 ft.; and a one-story unit, 30x150 ft. The increase in floor space totals approximately 90,000 sq. ft. Several printing machines were added, bringing the total to 19. Other new equipment included dye jigs, calenders, tenter range, agers, kiers, etc. Kemp high-compression burners were put on the singers. The color shop was enlarged and the dyeing department approximately doubled.

There was considerable expansion and reorganization in the bleach house. The number of kiers was increased to 28. Additional J-boxes were installed in order to eliminate the use of chemi pits where possible, and the number o washers was increased to give the good more washings and thereby improve the quality. White and gray pits were augmented to more than double original capacity.

Within the last three years, two boilers, 550 and 750 hp., were added to the power plant, necessitating an extension to the power house. A steel warehouse affording 50,000 sq. ft. of floor space has been purchased, and a water-purifying system installed. Altogether, several hundred thousand dollars were expended in bringing the Rock Hill plant up to the fine state in which it is today. Lockwood, Greene Engineers, Inc., Spartanburg, S. C., handled the major portion of the engineering work. Robert & Co., Atlanta, Ga., supervised installation of the 750-hp. boiler and erection of the warehouse and an addition to the boiler plant.

Lanett Completes Bleachery; Enlarges Steam Plant

LANETT BLEACHERY & DYE WORKS, Lanett, Ala., recently completed one of the most modern piece goods bleacheries in the South. A second building, designed to house the printing division, was finished at the same time, and a group of Rice, Barton & Fales printing machines for heavy goods was installed, along with complementary equipment, such as agers, soapers, dryers, etc. Also, a little later, a three-story, concrete-brick-and-steel, mill-type addition was erected and now is being used for office and storage space. The office is equipped with latest-type of air-conditioning.

An addition to the steam plant is being made, and a new high-pressure boiler with water walls is being installed. The boiler is nearly ready for operation at this writing. The machine shop is being extended considerably. J. E. Sirrine & Co., Greenville, S. C., are handling the engineering work.

Modern plant of Lanett Bleachery & Dye Works.

ADVERTISING PAGES REMOVED

THE OVERSEERS' CORNER

Is Cleanliness Worth the Cost?

By a Mill Superintendent

I have always been a member of the school that believes that a mill should be kept as clean and neat as possible. The theory, of course, is that, if operatives have good surroundings to work in, there will be fewer seconds caused by dirtiness or carelessness. Further, I, myself, would hate to go out in the mill and see a place that wasn't as clean, comparatively, as my own home.

About once a month I drop in to see a friend of mine who happens to run a plant making men's-wear worsteds. I swear that I have never gone up the stairway leading to the office without thinking that everything had been painted the day before—perhaps in anticipation of my visit! The office and mill are in equally spic-and-span condition, and it has always given me a great deal of satisfaction to know that the mill in question makes money where many others in the same line don't. A mill like that, I have thought, gives obvious evidence of efficiency.

I have always tried to run my mill on the same basis, but I got a jolt the other day. I went around to see an old friend of mine whom I hadn't seen in years. The mill yard, in my estimation, was a mess, and the office building no better. I had the same impression when I went through the plant, although I did note that everyone seemed to be working hard.

It was when we got back to the office after a tour of the plant that we began to talk turkey. Being old friends, and *not* in a competitive line of business, we could be frank. I told him that his whole outfit looked messy to me and that it didn't seem possible to make money with such a set-up. By way of an answer, he showed me his books. I must admit that his mill had made more darn money, in proportion to its size, than most any outfit in the same line. Here is how he explained things:

"The people who work in my plant work there because they want to make money. If they are interested in beautiful lawns and gardens, etc., they can have them at home, but here is where they come to earn dollars. After you get through with fixed overhead, there is only so much left to be split up between wages and profits, and I try to be fair about such a split. If I hire a couple of men to keep the mill grounds in splendid shape, if I have several painters on the payroll all the time, and if I have to pay workers to go around cleaning up, it all costs money. I tell my workers, frankly, that this isn't any garden party. It is a place where they come to get the necessary chore of earning a living done without any frills. The more I can save on non-essential fancy work, the more I can pay in wages to the productive operatives—and they know it. They seem to like the scheme."

As it was just yesterday that I ran up against such a proposition, I am still bothered. I still think that a clean mill is a better mill—but!

Listening as an Art

Editor, Overseers' Corner:

If a foreman is a sympathetic listener, he possesses a trait that builds goodwill for his mill. At the same time, the quality of the work is improved and production increased.

It may provoke a smile to say that a good listener can be a profitable asset to a plant, but the truth of the assertion was brought out accidentally when a large mill conducted experiments with rest periods. The workers were encouraged to tell how they felt and also were asked to mention happenings outside of working hours that might have affected their working efficiency. While important data on rest periods was gathered, the most important finding of the investigation was that, where the employees could unburden themselves to an overseer who was a sympathetic listener, morale was raised. As a satisfied worker is a good worker, gratifying gains were made.

VICTOR C. BORIS.

Hiring Second Hands

Editor, Overseers' Corner:

As I have worked with many types of organizations, I have been interested in the problem of who determines what men should be appointed second hands. In many places each overseer set up his own little kingdom and ruled supreme as long as he held his job. Then, when he was replaced, the new overseer would have a house-cleaning and appoint some of his own friends or relatives. On one occasion I took charge of a mill where one overseer had a relative for his second hand and where there were 16 relatives on various jobs out of 23 workers.

The method I like best is first to observe likely employees, get a check on them from other overseers and office help who spend much of their time in the mill, let the overseer in question know that you are interested in certain workers, and ask him to let you know frequently of their progress. With production reports on these workers, as well as payroll earnings, it is comparatively easy to find out how competent an overseer is in judging his help. This method enables the superintendent to sell the overseer the idea that ability on the part of workers chosen to be second hands is the biggest help he can get. By properly guiding the overseer, you can make him choose the man you wish, and yet let him think that he has chosen the man.

G. E.

Likes Kinks

Editor, Overseers' Corner:

I always look forward to reading the Overseers' Corner as it is generally interesting. At the mills here we find new ideas and helpful suggestions that really mean a lot to us. If all of us mill men would tell each other of the most helpful "small things" that we run across, it would be a great benefit to everyone. With this in mind, I have written about something we have tried out for several months, and which has been successful.

Now I would like to hear from someone else!

ABC.

Hiring Second Hands

Editor, Overseers' Corner:

Unless a mill is so small that the superintendent has a lot of time on his hands and can get to know all the workers, the selection of a second hand should be left entirely up to the overseer. To be frank about the whole thing, one trouble is that

CONTRIBUTIONS

Contributions to "The Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.

many superintendents are of the type that just hates to give anyone else any authority. Some carry things to the extreme of flying into a rage if they think an overseer has even touched their sacred authority. If you eliminate this element, it is obvious, in my opinion, that the overseer should select his own second hands. He certainly knows the workers in his department, and he knows which ones have possibilities. Further, the overseer and second hand must work together closely, and you can get along better with an assistant whom you have picked out yourself and have confidence in than you can with someone almost forced upon you. A.J.

Practical Helps for Overseers

Steam Box

The development of the electric steam box has made it possible to steam yarns at temperatures that will give the best results. As a rule, most boxes come equipped with only one set of thermostats (one wet and one dry). The writer does not wish to find fault with a box that has only one set, but wishes to point out that where the mill is in the habit of running several different yarns it is necessary to re-adjust the thermostats every time a different yarn is to be conditioned.

A great deal of adjusting can be eliminated by installing a two-way control switch and an extra set of thermostats. One set of thermostats is set for one temperature, and the other set for a different temperature. Temperature can then be changed by throwing the two-way switch from one set of thermostats to the other.

PETER C. WAYNER.

Steel Doups

In the Questions and Answers Department of the August issue appears the following question: "What is the most reliable equipment to attach to a 70-in. Gem head motion in the weaving of doup or crossed-weave fabric? We have tried those described in Posselt's loom book with poor success."

In the answer given two devices are described. That shown in Fig. 65 uses the worsted doup, while that shown in Figs. 275 and 276 uses the strap-and-roller system. Why the latter device has the doup thread drawn through both eye *C* and the brass eyelet *L* I cannot understand. The result would be the same if the doup thread were drawn through the eyelet *L* only. Drawing it in the eye *C* creates an unnecessary cross shed, the evil in leno weaving. It also makes it necessary to use a slackener, which would not be needed if the doup thread were drawn through the eyelet *L* only.

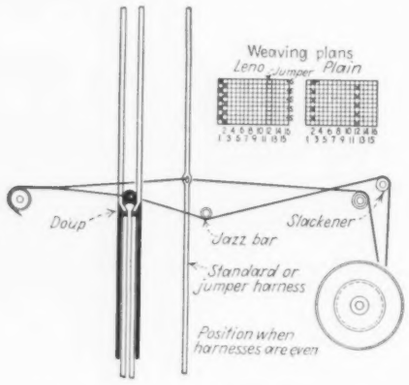


Fig. 1—Leno weaving, using one set of doups, jumper, jazz bar, and slackener

The most practical method of weaving leno, whether it is an all-over leno, leno stripe, or center selvage, is by means of steel doups. Weaving of lenos with these doups may be accomplished (1) by using one set of doups, jumper motion, jazz bar, and slackener; (2) by using one set of doups with needle point up and one set of doups with needle point down; and (3) by using one set of doups, two standards weaving plain, jazz bar, and slackener.

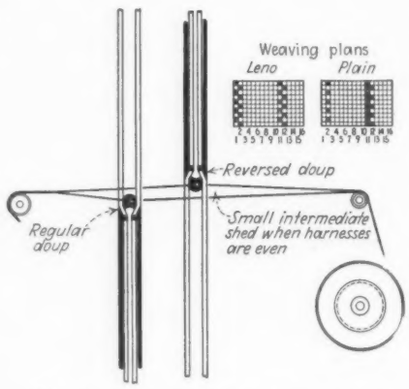


Fig. 2—Leno weaving, using two sets of doups

The first method, shown diagrammatically in Fig. 1, is the usual method of weaving one-cross-one leno with steel doups. One set of steel doups is placed nearest the reed, and a standard harness is placed rather far back to lessen the angle of the doup threads while in the cross shed.

A jumper, or leno motion, is attached to the standard harness to raise this a little more than half way up and down again between each pick. While the standard harness is always down in leno weaving, it must be raised a little more than half way up and lowered again between each pick so as to lift the standard threads above the point of the needle in order that the latter will be free to come up either to right or left of the standard threads, depending upon which of the doup heddles is raised.

A leno motion for a Gem head, weaving plain leno, can be purchased from the loom builders; but a homemade leno motion can easily be produced. Simply attach a double stirrup, spanning two of the lower jacks of the Gem head, to the upright jack wire and connect in the usual way to the standard harness. The regular top harness straps from the standard harness over the top sheaves on the arch are joined together above those sheaves. A spring sufficiently strong to raise the standard harness half way up, when permitted to do so by the movements of the jacks, is attached to the joint ends of the harness straps and to some convenient point on the arch. The two jacks operating the standard harness are drafted in plain order; that is, one up and one down. As one of the jacks descends, it will slacken up on the harness connection, which permits the spring to pull the standard harness up until the upgoing jack meets the descending one. This meeting would take place at the half-way mark. At this point the stirrup spanning the two jacks will be caught by the upgoing jack and again brought to the top and, consequently, the standard harness will be again pulled down for the next pick against the resistance from the spring.

This jumper, or leno, arrangement for head motions is very simple to make and works very well. The only disadvantage is that it requires two jacks of the head. There are, of course, several other ways in which a jumper motion could be arranged independently of the head motion, but this would involve more work. If there are unused jacks in the head motion, the arrangement described is the most simple and least costly to make.

A jazz bar for plain leno weaving is preferable to a back harness. The object of the jazz bar is to facilitate the obtaining of a clear, open cross shed. It consists of a bar placed over all doup ends and behind the regular harnesses. It is supported in slides attached to the loom frames and is held down by a spring at each end which is fastened to the floor. These springs should not be too strong to permit the jazz bar to yield a trifle to compensate for the variation in tension during the weaving. The jazz bar is therefore also called a compensating bar.

There must also be a slackener to slacken all the doup ends while in the cross shed. This can be operated from the same jack which operates the cross doup heddles if the fabric is light, or from a separate jack if the fabric is heavy.

In the drawing-in for right-hand doups, the first thread is drawn in on the standard harness and to the right between the doup heddles. The second thread is drawn to the right of the standard thread and under it to the right through the eye in the doup needle. Fig. 1 shows the arrangement and the leno and plain weaving plans. There is, of course, another plain weaving plan on the cross shed; but, unless necessary, this should not be used, as it places greater strain on the warp threads. In this case, harnesses Nos. 1 and 2 would simply be reversed and a slackener added as in leno.

The second method, shown in Fig. 2, is perhaps the most simple of all for weaving one-cross-one leno. It consists of one set of doups with the points of the needles up and placed nearest the reed and one set of doups with the points of the needles down and placed rather far back. No jumper motion, jass bar, or slackener is needed.

In the drawing-in the first thread is drawn to the right through the eye in the reversed doup and to the right between the doup heddles of the regular doup. The second thread is drawn to the right between the doup heddles of the reversed doup and to the right through the needle eye in the regular doup. In this method of leno weaving the cross shed is eliminated. The arrangement and also the leno and plain weaving plans are shown in Fig. 2. The other plain-weaving plan is obtained by reversing

the first and second and the eleventh and twelfth harness draftings.

The third method is similar to the first, with the exception that there are two standard harnesses which weave plain throughout. This eliminates the necessity of using a jumper motion. The method is often used for fancy figured leno, and it is also well adapted to center selvages, as it produces a firm selvage which does not easily unravel when the cloth is cut apart. The two standards weaving plain throughout and the crossing doup thread drawing them together make this leno very resistant to slipping or displacement.

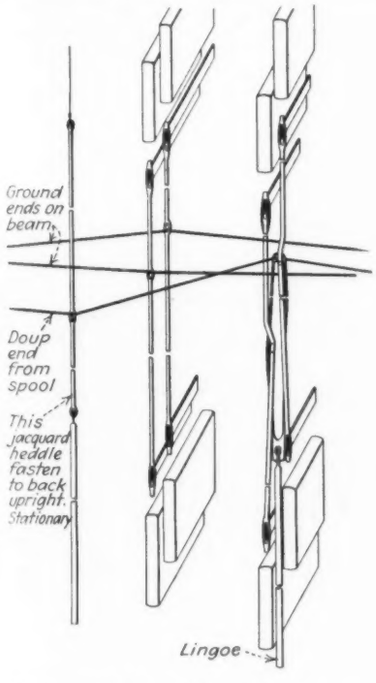
The drawing-in is similar to that of the first method, but two standards are used to every doup thread. Instead of being attached to the jumper motion, the standard harnesses are attached to the regular jacks of the head motion. The fact that the standard harnesses interchange position between each pick dispenses with the jumper motion, as these threads will be half way up at the time the harnesses are even. One of the threads will be half way going up and the other will be half way going down. The doup needle will therefore be free to come up on either side of the standard threads.

IVAR MOBERG

Leno Devices

Technical Editor:

In reference to your illustration and explanation of selvage motions [August, page 93], there are several different attachments that can be applied for this purpose, but for fine fabrics they are in all cases too cumbersome. A method commonly



Leno weaving without jumper or similar attachment

used is to apply the flat steel doup, the method of application depending of course on the type of weave in the fabric and also the number of doups required in a width. If the fabric being woven has two frames at the front weaving plain, then doups of the repair type can be slipped on in the desired places.

Three ends are necessary in order to avoid applying any additional attachment to the looms, such as a jumper motion. Two of these ends are drawn from the two back harnesses in the ground weave and entered between the standards of the doup at the front. A third end, known as the doup end, is drawn directly from a spool or light beam in the eye of the doup needle. This method is shown in the accompanying diagram.

It will be noticed that the doup is held down at the back by means of a dead heddle. Another method is to stretch a wire across the loom and have all doup ends under it. Whichever method is applied, the doup end should be held down directly back of the last harness for about 2 in. below the bottom shed line.

If a large number of doups are necessary in a width, then, although the same method is applied, it would be advisable to add two more frames to the loom at the front with just doups mounted on them.

S. R. MOORE
Steel Heddle Mfg. Co.

Questions and Answers

Holes in Hosiery

Technical Editor:

We inclose herewith a press-off for your inspection. The fabric is made of 4-thread, 15½ turns, and you will note that there is a hole covering three successive courses to be found between the splicing. This kind of a defect has lately been on the increase with us, and we shall appreciate your suggestion as to what may be the cause of it. On the machine from which we took this particular press-off we have no welt rods, and the operator has been cautioned as to the use of his pliers and scissors. So far as this trouble being due to dry silk is concerned, our humidity is constantly at 65% and, as a rule, we do not find any trouble due to dry silk. (8351)

An examination under a course counter indicates that this fabric is knit only 40 courses per inch. This is rather loose for a 4-thread number. It means that the relationship between the needle and sinker is too great and will in itself have a tendency to split the stitch. If you feel you must produce this fabric, it would probably be better to raise the needles slightly and increase the knockover in proportion.

It also appears that the fabric was knit on an old-type machine as the rocker is evidently of the square type and not of the pointex or graduated type. The rocker has either been cut, in order to minimize sleaziness in instep, or has been applied in full at the seventh graduation. The point of full rocker application is very noticeable, as it extends a full 28 needles out into the body fabric. If the machine is operated at practical speed, there will be enough needle-bar vibration caused by this type of rocker to cut the stitch. We also advise a slight curve in the cut of the cam, so that the on-and-off movement will not be so abrupt. This will reduce the vibration.

We recommend a slight reduction in machine speed during the splicing. This will not only aid in reducing this trouble, but will greatly help the appearance of the fabric.

Cotton Upholstery Shady

Technical Editor:

We are making an upholstery fabric using mock plied yarn filling, as in the attached clipping. You will note that the clipping shows bands of shady filling.

The construction of this filling is as follows: One end of 4/1 mock yarn made from two colors of roving, the mock being 50% of each color. The 4/1 mock yarn has 10 turns of z-twist. The mock yarn is plied at the twister with a 15/1 yarn which has 9 turns of Z-twist. The ply twist is 6½ turns of S-twist.

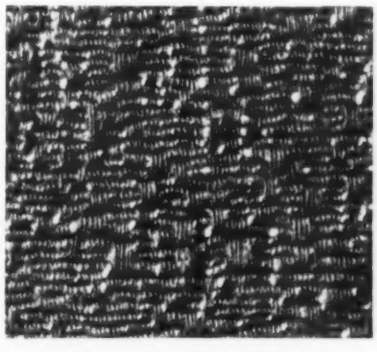
We use double trumpets for the roving at the spinning of the mock yarn. We have the spinning frames and the twister bands checked daily, and any slack bands found are replaced. We check these bands by using a stroboscope so that we can keep the twist as nearly uniform as we know how.

If we add more twist to avoid the shady filling, it causes the finished filling yarn to be so weak that it does not run well at the loom. The twists given in the above information are fixed and we cannot change them without changing the appearance of the yarn so much that it would be unsatisfactory.

We make the same weight yarn in solid colors, but use 6½ turns in the 4/1 instead of 10 turns and use all other twists and counts the same and get a very strong yarn. We are at a loss to know how to control the shading and at the same time maintain satisfactory strength in the yarn.

Any helpful information you can give us will be greatly appreciated. (8369)

The shady places are caused by chance in the manner in which various picks of the novelty filling line up with one other and with the weave. Your yarn is so twisted that, when it is held firm, it appears to consist of alternating thick and thin places spaced about ⅛ in. apart. Actually this is a spiral effect; but, since the yarn in the fabric is naturally not revolving, it presents this thick and thin effect to the eye. Now, taking any given thick spot, it is chance as to whether the



green or the yellow roving will be on the visible side of the yarn; and, furthermore, taking the interlacing of the warp threads into consideration, it is chance also as to whether a thick spot or a thin spot, which is predominantly red, will appear on the surface of the fabric at any given point. In other words, at every place where the filling has an opportunity to show, only chance decides whether it will be the conspicuous yellow, the less conspicuous green, or the very inconspicuous red.

Whenever a condition of this kind occurs, it is natural to find the filling forming itself into a pattern in places, sometimes bunching its most prominent features in one area and becoming so inconspicuous in another area as to be to all intents and

purposes, a plain yarn. The latter effect is called a bald spot and is exactly the defect you are experiencing.

This defect is encountered in practically all fabrics containing novelty yarns, and it is a common and accepted imperfection in such fabrics. Sometimes a cloth will weave 30 to 40 yd. without patterning objectionably, and at other times will pattern badly yard after yard. It seems probable that the more even the twist, the more likely it is that patterning will extend over a large area, as irregularity in the order or spacing of the novelty elements of the yarn should tend to break up any unwanted synchronism of element and weave. We regret that we know of no practical remedy to offer you, but we do not consider the shading particularly bad in the sample you have submitted.

Finishing Cotton Twill

Technical Editor:

We are inclosing herewith a small swatch of 40-in., 64x88, 4.50 twill. We have been experimenting, but have not been able so far to obtain a satisfactory finish. Our sample has been mercerized and schreinered, and our trouble seems to be that we are unable to secure the right hand or the right ingredient for finish. Anything you can do to help us out in the matter will be appreciated. (8357)

In order to obtain the desired finish on 40-in., 64x88, 4.50 twill, we suggest that you try the following procedure: Dye in the usual manner; dry; run through the sizing material on a starch mangle; dry to the required width on a tenter; cool and condition; and schreiner. The following formula should give approximately the body and luster required. Mix 20 lb. of tapioca starch and 20 lb. of blonde dextrin with 150 gal. of water; bring to a boil; boil for 15 min.; allow solution to cool to 190° F.; add 10 lb. of a good softener compounded from sulphonated olive oil and mineral oil. If more stiffness is required, increase the amount of starch and dextrin; if less stiffness is wanted, decrease the amount of starch and dextrin. In either case, maintain the same starch-dextrin and softener ratio. That is, if it proves necessary to use 25 lb. of starch and 25 lb. of dextrin, increase the amount of softener to 12½ lb.

Numbering Novelty Yarns

Technical Editor:

Inclosed is a sample of yarn. We number this yarn 305. Can you tell us how to number boucle yarn such as this sample, but with five ends or six ends or a three-end yarn? We should like to know what system is used. (8324)

In all fancy-yarn mills it is customary to give each yarn handled a style number, and an index of the number is kept showing the construction details—such as component yarns, size, color, turns per inch in each component yarn, and any other points which may be needed for reference. The size or weight of most novelty yarns is expressed in yards per pound. Boucles, such as this sample, however, are sized the same as cotton yarns. The count, cotton system, multiplied by 840 equals the yards per pound.

In the case of this sample of yours, 120 yd. weighs 330 grains. Therefore the count, cotton system is (120 x 8.33) ÷ 330, or 3.03. This calculation can be made applicable to any number of yards reeled off, simply by substituting any required number for the 120. Now, the yards per pound of this number would be 3.03 x 840, or 2,545. No matter what number of ends go into the boucle, be there anywhere from three to seven, the same system of numbering applies. This system is essential for other calculations, such as the theoretical production per spindle.

Holes in Circular-Knit Rayon Fabrics

Technical Editor:

We are inclosing samples of circular-knit rayon cloth. We shall appreciate your opinion as to the cause of the holes in this fabric. (8360)

In our opinion this defect is due to rough needles cutting the rayon in the row of wales where the holes occur. All of the filaments may not be severed as the fabric comes off the machine; but the strains and tension set up in dyeing have pulled the broken elements, causing the yarns to break and forming holes in the cloth.

Spinning Texas Wool

Technical Editor:

We are having considerable trouble in making an acceptable yarn from a fine (eight-month) Texas wool. The batch is 100% dyed, spun 3 3/4-run or 7 1/2-grain (Cohoes system), emulsion No. 1 lard oil. The yarn is nubby and brittle and develops thin places or fine ends. Can this type of wool be successfully spun this weight and still make a good even knitting yarn for cut-presser work? We have to give it 16 holes of twist or 7 1/2 turns to the inch to get any strength. We are inclosing a pinch of dyed wool, and your advice will be appreciated. (8359)

Wool stock-dyed black is practically always brittle and harsh and will not spin so smoothly as white wool or to so fine a count with desirable strength. You should have no trouble spinning your stock to 1.13-typp or 3¾-run if it were white. In getting the deep black you have, the dyer uses considerable dye. This dye covers the fiber and often necessitates considerable care to insure the proper oiling of stock at the picker.

Our suggestions are as follows: (1) Watch the dyeing, to be sure stock is boiled as little as possible. (2) Use at least 15% of your oil in emulsion form at the picker. (3) Condition the stock overnight if possible. (4) Try a different speed pulley on the mule to give a rate of draw suitable for this stock. (5) Blend in 10 to 15% of ⅜s blood stock before dyeing.

Rayon Filling Breaks

Technical Editor:

Will you kindly give me some advice on how to run rayon filling when it is not sized? We are running rayon on Super-Silk automatic looms built by Crompton & Knowles Loom Works and are having a lot of trouble with this rayon filling breaking. (8364)

Without definite information as to where your filling is breaking, it is difficult to answer your question specifically; but we believe we can offer a few suggestions which may prove of help to you. You should have no serious difficulty, however, in running this unsized rayon filling. A few years back such filling was used in considerable quantities without difficulty.

In the running of this type of filling, however, special attention should be paid to the fur. This should be of soft character, preferably squirrel fur, and lumps and extremely long hair should be avoided. The tension in the shuttle should be sufficiently even to prevent the filling from leaving the shuttle with a jerky pull. Care should be taken to see that the wood or fiber of the quills is smooth and that the spindle lies in a direct line with the inside porcelain eye of the shuttle.

Even if all is well with the shuttle, filling breakage may be caused by other troubles, such as too much pick, improper shape of the shuttle binders, misalignment of spindle rods, misalignment of reeds, rebounding of shuttles, too much tension on the stop motion or filling fork, and a sharp edge on the feeler wires.

If you find that the filling is breaking or cutting at or in the shuttle boxes, we suggest that you cover the binders with a piece of canvas or other fabric for their entire length.

Sometimes good results are obtained by inserting a piece of lamb's wool in the shuttle about ½ in. from the end of the quill. Before the lamb's wool is inserted, a small hole is punched in the center for the filling to pass through. The piece is about 1 in. square and can be fastened to the sides of the shuttle with glue. It takes a U shape in the shuttle and serves as a pad. Shuttles have been designed specifically for this type of filling.

Personal News

John O. Moyer has been promoted to the position of assistant manager of Fitzgerald (Ga.) Cotton Mills, **J. Clark** has been promoted to superintendent of weaving, and Jack Boyter, formerly with Rhodiss (N.C.) Mills, has been made overseer of spinning.

E. L. Head, who completed special textile work at Clemson Textile School in 1936, has been promoted to night overseer of spinning at Springstein plant of Springs Cotton Mills, at Chester, S. C.

O. N. Norris, formerly president of Quality Hosiery Mills, Murfreesboro, Tenn., and **Dan Boone,** formerly assistant treasurer of Cherokee Mills, Cleveland, Tenn., have begun the operation of a hosiery mill at Chattanooga, Tenn.

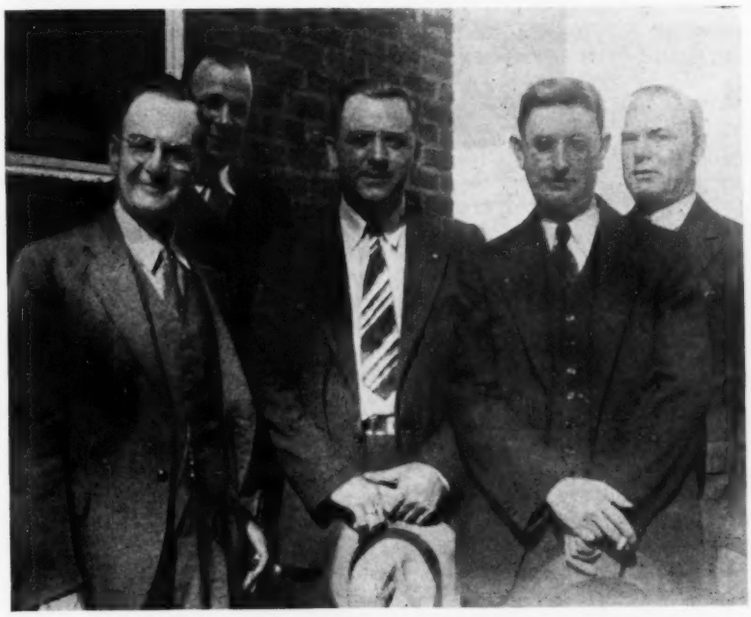
H. P. Walker, who completed the textile course at Clemson Textile School in 1924, has been transferred from Springstein plant of Springs Cotton Mills, Chester, S. C., to overseer of spinning at the Fort Mill, S. C., plant.

Rex Hughes has resigned as second hand in weaving at Dover Mills, Shelby, N. C.

Milton W. Herstoff, a graduate of New Bedford (Mass.) Textile School of the class of 1935, who for some time has been with the Nonquitt Mills, New

THE OVERSEERS' CORNER

GROUP OF ENGINEERS SNAPPED AT SPARTANBURG



Left to right: C. G. Seay, master mechanic, Drayton Mills, Spartanburg, S. C., M. E. Lake, Duke Power Co., Charlotte, L. M. Kincaid, master mechanic, Kendall Co., Paw Creek, N. C., L. H. Pritchard, master mechanic, Pacific Mills, Columbia, S. C., and Fred Tindall, master mechanic, Inman Mills, Inman, S. C. Mr. Kincaid is the retiring chairman of the Master Mechanics Division, S.T.A., which was meeting at Spartanburg, Oct. 23; Messrs. Lake and Tindall are among those elected to the executive committee.

S. T. A. Meetings

The Eastern Carolina Division of the Southern Textile Association met Oct. 31 at Durham, N. C. A report of the meeting will appear in the next issue.

The Tennessee Division met Nov. 7 at Knoxville, Tenn. A report of the meeting will be carried in the next issue.

Bedford, Mass., has obtained a position with the Farr Alpaca Co., Holyoke.

J. M. Blackman, Clemson textile graduate of 1929, has resigned his position with Pendleton Mfg. Co., LaFrance, S. C., to accept the position of boss dyer with Mace Mfg. Co., Randleman, N. C.

H. L. Dearman, assistant superintendent of Roseboro (N.C.) Mfg. Co., has resigned to accept a position he formerly held as overseer of the carding and spinning departments of Sanford (N.C.) Cotton Mills.

Robert **T. Crawford** is now textile analyst for Limerick Yarn Mills, Portland, Me.

L. H. Darnell has been appointed second hand in weaving at Drayton Mills, Spartanburg, S. C.

R. W. Schrimshire, formerly of Bibb Mfg. Co., Columbus, Ga., is now overseer of spinning, winding and warping at Buck Creek Cotton Mills, Siluria, Ala.

W. A. Smith, formerly with Brandon Corp., Greenville, S. C., is now master mechanic for Spencer Mills, Spindale, N. C.

L. D. Richard, overseer of the cloth room at Martel Mills, Batesburg, S. C., is now at Martinsville, Va.

J. Russell Fennell has resigned as overseer of carding at the No. 2 plant of Springs Cotton Mills, Fort Mill, S. C., and has been succeeded by **Charles Jones,** formerly with Highland Park Mills, Rock Hill, S. C.

George S. Pickett of Keene has been placed in charge of the dyeing department at Elm Mills, Tilton, N. H.

Abram H. Topham, overseer of the drawing-in department of Farr Alpaca Co., Holyoke, Mass., for 38 years, has retired.

J. T. Byrum has resigned as superintendent of Cartex Mills, Salisbury, N. C., to accept a similar position with Winville Corp., formerly Barrow County Cotton Mills, Winder, Ga.

William Gleason is now master mechanic at Beauknit Weaving Mills, Cohoes, N. Y.

F. G. Hall, formerly with Alabama Mills, Co., Fayette, Ala., is now general overseer weaving, Werthan Bag Corp., Nashville, Tenn.

Victor Phillips has resigned as a departmental superintendent of Groves Thread Co., Gastonia, N. C., and has gone to Greenville, S. C.

B. K. Sharp, Clemson textile graduate of 1934, formerly with Victor-Monaghan Co., Greenville, S. C., has accepted position as assistant to superintendent at Calhoun Mills, Calhoun Falls, S. C.

Hector P. Stokes, of Suncook (N.H.) Mills, has been appointed judge of the Municipal Court in Allentown, N. H.

J. O. King, formerly overseer weaving, Werthan Bag Corp., Nashville, Tenn., is now overseer weaving, John P. King Mfg. Co., Augusta, Ga.

L. Holmes, of Tarbardrey Mfg. Co., Haw River, N. C., has been transferred to Asheville (N.C.) Cotton Mills where he will be assistant superintendent. His father, **Alfred Holmes,** is superintendent of Tarbardrey Mfg. Co.

L. M. Kincaid, for several years master mechanic at National Weaving Co., Lowell, N. C., has resigned to become master mechanic at the Thrift plant of Kendall Co., Paw Creek, N. C., where he succeeds **P. D. Hatley,** who has been transferred to a similar position at the Mollohon plant, Newberry, S. C.

A. E. Whaley is now overseer of spinning and winding at Cherokee Spinning Co., Knoxville, Tenn.

Ed Holland has been promoted from section man to second hand of spinning at Cherokee Spinning Co., Knoxville, Tenn.

Carl Mattis has been promoted from loomfixer to second hand of weaving at Cherokee Spinning Co., Knoxville, Tenn.

Paul H. Scharschmidt, formerly overseer of dress-goods dyeing at Arlington Mills, Lawrence, Mass., has resigned.

Spinning and Weaving

Covered in round-table discussion at North Carolina — Virginia Meeting

GENERAL mill problems covering all departments were discussed from the floor at the fall meeting of the Northern North Carolina-Virginia Division of the Southern Textile Association held Oct. 3 at Greensboro, N. C. About 100 members were present. L. J. Rushworth, superintendent of the Riverside plant of Riverside & Dan River Cotton Mills, Inc., Danville, Va., who is chairman of the group, presided.

In addition to the technical discussion, the meeting was featured by an address from Herman Cone, treasurer of Proximity Mfg. Co., who spoke on obsolescence as a cause of failure for

many mills. George P. Stone, superintendent of Proximity Mfg. Co., welcomed the mill men to Greensboro.

Technical Discussion

The first question was asked by W. A. Hunt, superintendent of Pickett Cotton Mills, Inc., High Point, N. C., who wanted to learn if anyone had experimented with loose draft and small-diameter top roll in spinning. Culver Batson, superintendent of Consolidated Textile Corp., Lynchburg, Va., replied that he has made a number of tests utilizing different kinds and sizes of middle rolls. After trying rolls made of wood, aluminum, steel, and cork, he finally decided steel rolls were the best because they could be made in his own shop. Furthermore, the diameter of such rolls is not so important as the weight, he pointed out, explaining that he uses different weights of middle roll for different yarn numbers. J. C. Farmer, assistant superintendent of Carolina Cotton & Woolen Mills Co., Fieldale, Va., reported that he unweighted several 2,200-grain middle rolls for the purpose of eliminating speeders. The draft was raised from about 16 (1.10 single roving) on 1-in. cotton to about 25 on 1 1/16-in. cotton, the only real advantage being the elimination of the speeders. The yarn was just as good as before, but probably no better.

R. K. Craven, overseer of weaving, Minneola Mfg. Co., Gibsonville, N. C., inquired if any of the members had installed a high-speed winding and warping system on pattern work. Chairman Rushworth said that he has such a system in operation. It is no different in form from a regular warper, he explained, but the creel must be built differently. The pattern is laid out in units of twelve and the tridents put in rotation on the creel. In answer to another question, Mr. Rushworth said he operates a beam-dyeing system which handles eight beams at one time. Some of the sections, however, can be blocked off if a smaller number of beams are to be dyed. This same system is used for bleaching at times.

Spinning-Room Test

With reference to long-draft spinning, W. J. Jennings, overseer of carding and spinning, Minneola Mfg. Co., Gibsonville, reported the results of a test as follows:

Factors entering into the test included single-process picking, 14-oz. laps, 54-grain sliver on cards, six ends up and 54-grain sliver on both coarse and fine drawings, metallic rollers on slubbers and drawings, .60-hank roving on slubbers, two doubled on intermediates producing 1.80-hank roving, single roving or spinning 1/26s yarn with Casablancas long-draft system employing cork rolls. With a twist multiple of 4.75, breaks averaged 66.83 lb. on 25.98s; with a twist multiple of 4.56, breaks average 67.41 lb. on 26.09s; and with a twist multiple of 5.03, breaks averaged 65.37 lb. on 25.88s. The old standard break for 26s was 66.03 lb., Mr. Jennings said, while the new is 74 plus.

At the same time, he said, an end-breakage test was run: Monday, Sept. 28, evening shift, 50.75 breaks per hour per thousand ends; Tuesday, Sept. 30, morning shift, 46 breaks per hour per thousand ends. Cotton used in these tests was 15/16 in. and slightly lower grade than middling.

There was considerable discussion on the advisability of applying one-process drawing to old frames. Opinion was that one-process gives a better break but occasionally less even yarn. Cotton with 1-in. or better staple was said to handle very satisfactorily on the one-process.

Controlled-draft drawing was said to produce evener yarn than regular drawing because sixteen slivers are blended instead of six.

With reference to cleaning fly off spinning frames, Mr. Anderson remarked that he uses a small portable revolving brush which is so efficient that one boy can clean over 60 frames a day. The spinners were said to be very pleased with the results obtained by this system.

Bristles in shuttles, it was agreed, should be kept as light as possible—just heavy enough to keep down ballooning.

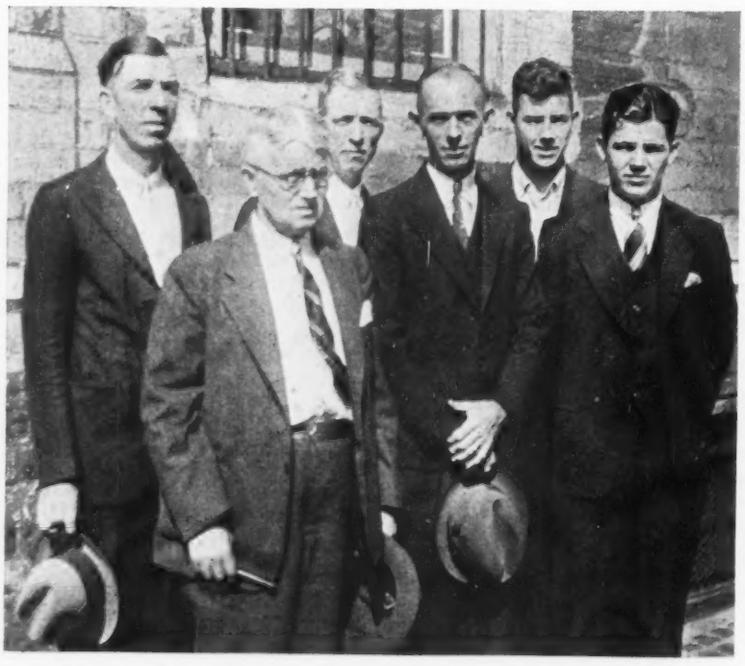
D. F. Short, of Lynchburg, Va., brought up the subjects of fly in the weave room and loom stoppage caused by gouts from the fans on high-speed warpers. Mr. Craven said that a good cleaning system on the warpers should keep down the gout trouble, and added that a 12-in. board between the warper creels and the spoolers would stop a lot of lint from blowing along the floor from overhead cleaners. Chairman Rushworth remarked that during cleaning periods he draws a sheet between individual warpers. Mr. Anderson mentioned that the new vacuum cleaning systems take care of this problem of fly and lint remarkably well.

Herman Cone's Address

A tremendous number of business wrecks were left in this country as a result of the depression which began in 1929, and the textile industry was not spared, emphatically declared Mr. Cone at the beginning of his address on "Obsolescence as a Cause of Failure." Over 20% of the spindles which were in place in 1929 have gone by the boards.

It is true, he said, that many mills are handicapped by lack of funds for modernization programs, but it is up to these managements to make the best of what they have in order to put their

GROUP FROM MINNEOLA MFG. CO., GIBSONVILLE, N. C., SNAPPED AT GREENSBORO MEETING OF NORTHERN N. C.-VIRGINIA DIVISION OF S. T. A.



Left to right: Jim Riley, card grinder; W. J. Jennings, overseer carding and spinning; J. F. May, 2d hand spinning; J. T. Childers, overseer carding and spinning; John Wagoner, loom fixer; Ed White, supply man; all from Minneola Mfg. Co., Gibsonville, N. C.

mills in as good a competitive position as possible. Unfortunately, there is a great tendency on the part of many executives to resist new methods. However, if the older men would combine their knowledge, based on long years of experience, with the technical information which is obtainable today, the older mills would be in a very strong position to meet the competition offered by mills starting from scratch and with new equipment throughout.

"This resistance to new methods," he continued, "is not only due to apathy on the part of key men, but also is due to the fear that changes will be resented by labor. I can sympathize with this fear. But on the other hand, I believe that, if properly handled, this difficulty can be overcome. If the right attitude exists between you and your employees, there is no reason why a change for the better cannot be arranged. Employees should be informed as to the reasons for the changes, and of the effect such changes will have on their wages and work assignments."

Mr. Cone concluded his address with a warning that new mills are going to be built and new methods are going to be perfected, and that, unless experience gained over years of practical application is combined with newer technical knowledge, obsolete mills are going to fall by the wayside.

W. Lexie Davis, of Proximity Mfg. Co., was elected a member of the executive committee.

Test Technique

Discussed at Spartanburg carding and spinning meeting

METHODS of performing tests in the carding and spinning departments were discussed at the joint fall meeting of the Carders and South Carolina Spinners Divisions of the Southern Textile Association held Oct. 10 at Spartanburg, S. C. Joseph C. Cobb, night superintendent, Chiquola Mfg. Co., Honea Path, S. C., presided as chairman and led the spinning discussion. J. O. Corn, superintendent of Pacific Mills, Columbia, S. C., was in charge of the carding session.

Carding Discussion

"The actual technique or method of performing tests on pickers, cards, and drawing frames is what we want to discuss," emphasized Mr. Corn in opening the program, "rather than results and corrections on the machines."

The performance of cleaning machinery can best be checked by weighing the waste, suggested Chairman Cobb, the procedure being to clean all parts of the machine thoroughly and run cotton through with the regular settings. The waste is then collected from under various parts of the machine and weighed carefully. The machine is again cleaned thoroughly and new cotton run through, the weighing process being repeated exactly as before. This waste is calculated as percentage of total cotton cleaned, and the figures show a comparison of the efficiency of the machine on two kinds of cotton. With these data in hand, it is a simple matter to vary the settings of the machine until the most desirable percentage of waste is produced. The members unanimously agreed that this is the most logical method of testing picking machinery.

J. L. Brannon, overseer of carding, Mooresville (N. C.) Cotton Mills, reported testing in the spinning room the effect of one-process picking as compared with three-process. Three processes give him less variation in yarn numbers and 4 lb. more breaking strength on 19s warp.

Mr. Brannon tests the evenness of his card laps by laying them out on the floor and weighing yard for yard. W. E. Campbell, Republic Cotton Mills, Great Falls, S. C., pointed out that even though laps compared favorably yard for yard, they probably would not so compare inch for inch. L. N. Crocker, overseer of carding, Riverdale Mills, Enoree, S. C., suggested placing a light behind the laps when stretched out to show up thin places. David Clark, editor of *Textile Bulletin*, said that he noticed a device in a Fall River mill for hoisting laps up for observation in front of a special window built all the way to the ceiling. B. W. Bingham, overseer of carding, Brookside Mills, Knoxville, Tenn., said that it is very difficult to roll a lap out on the floor without stretching it, and described a device to eliminate this practice which he has rigged up from two rollers and the frame of an old comber. The lap is wound from one roller to another by means of a crank with practically no stretching. A glass-top cloth table with a light under it permits easy inspection for thin places.

With reference to testing drawing, many of the members were surprised to learn from Mr. Corn that sliver often varies as much as 50% inch for inch. No one was able to say what causes this variation, although several possible reasons were suggested—viz., worn metallic rolls, unsuitable trumpet taper, and incorrect size of trumpet hole. In connection with this, Mr. Corn said that he has found that a 15 to 20° taper and a $\frac{1}{8}$-in. hole give the best results with 60-grain sliver. Sliver and roving testing instruments are a good investment for a mill to make, said Mr. Corn, concluding his part of the program.

Spinning Tests

Chairman Cobb opened the spinning discussion by asking for a description of test equipment in use in the various mills represented.

Newton Hardie, superintendent of Inman (S. C.) Mills, reported that he uses regularly an individual-strand breaker and an oven for determining moisture in yarn. The single-strand breaker is particularly important in test work, he said, as it shows the amount of stretch. This is not possible with a skein breaker alone.

Mr. Corn has an automatic conditioning room, oven, skein breaker, and sliver and roving testing machines. He is planning to add a single-strand breaker as soon as possible.

Smith Crow, superintendent, Drayton Mills, Spartanburg, S. C., has similar equipment, as well as a seriplane for testing evenness. He was very enthusiastic about the advantages of the seriplane and described in detail how records are kept over a period of time.

W. E. Hammond, superintendent, Balfour (N. C.) Mills, sends his material to be tested to a nearby textile-school laboratory, but is very much in favor of a mill having its own testing equipment.

With reference to the time element in testing, Mr. Hardie said that he believes in staggering the days and shifts on which tests are made, rather than making them each week at a certain time of day. However, he always runs every test the same length of time—4 hr. Pacific Mills, Columbia, was reported as making tests every week, each run being 8 hr.

Several members reported that they use regular forms in making ends-down tests in the spinning room. At Pacific Mills the same girl makes all spinning tests. At Inman Mills, one man does all the testing in all departments, including weaving and slashing. Unclassified ends down at Inman run from 40 to 48%. Consensus was that 35 ends down per 1,000 on 30s yarn is a good average.

Rolls were reported as being set in a number of different ways. Mr. Hammond runs them as close together as possible in order to increase the break of his yarn. Mr. Corn pulls the staple of his roving and checks this against a carbon mark showing the bite of his rolls. Others set them by guess.

There was much argument between carders and spinners as to the proper amount of twist which should be in roving to give best results. It was agreed that less twist is necessary with long draft than with old regular spinning. Several spinners reported that, contrary to the usual opinion, they often

ask the carder to take out twist. As no definite amount of twist has ever been agreed upon as being correct, Mr. Hardie suggested that several members run tests on twist before the next meeting and report the results at that time.

It was voted to hold the next meeting at Columbia, S. C.

Master Mechanics

Discuss power, maintenance, and management problems at Spartanburg

ELECTRIC motors, steam and boiler problems, power consumption, and other mechanical factors in mill operation were discussed by the Master Mechanics Division of the Southern Textile Association at its fall meeting held Oct. 23 at Spartanburg, S. C. L. M. Kincaid, master mechanic, Kendall Co., Paw Creek, N. C., chairman of the group during the last year, presided over the session.

Technical Discussion

A good standard speed for a lineshaft in the mill was agreed to be about 285 r.p.m.

Cold-rolled shafts break apparently without cause, according to H. L. Crocker of Clinton, S. C., because of the crystallized state of the metal. Excessive vibration or any undue strain or sharp bend is likely to cause the metal to snap. Consensus was that 10-20 carbon steel is about as good as any other for shafting, although some members favored leaving selection of steel for this purpose entirely up to manufacturers.

Group drives were agreed to be the cheapest to operate from a power standpoint. However, M. E. Lake, of Duke Power Co., pointed out that the flexibility and increased efficiency of individual drives usually more than offset increased power costs. Fred Tindall, master mechanic, Inman Mills, Inman, S. C., said that he has 148 individual drives and 24 group (four-frame) drives in operation, and notes little difference in maintenance costs.

With reference to changing over internal-resistance-type motors to the squirrel-cage type, Mr. Tindall described two such changeovers at his mill which have been in operation for four or five years. The only thing he did was to have these motors rewound. A third motor was changed over without rewinding—that is, the brushes were simply pushed in and blocked. The first two have not given him any trouble at all since the changeover. The only trouble he has had with the third is that it hangs on center when starting, due to "dead spots." In connection with this, Mr. Tindall uses a standard manually-operated, 550-volt, 50-hp., 40-cycle compensator. Mr. Lake added that the only way to eliminate dead spots in such a motor is to use a squirrel-cage rotor. In answer to a question, he said that too much copper on the bars would tend to reduce the starting torque.

There was considerable discussion concerning the effect of lateral play on electric motors. R. F. Nichols, plant engineer, Newberry Cotton Mills, Newberry, S. C., said that something is wrong with a motor having no lateral play and that it will heat automatically. Mr. Aynesworth, of Cheraw Cotton Mills, Inc., Cheraw, S. C., suggested that a ball-bearing equipped motor, with a V-belt or flat-face drive, contains no lateral play if properly aligned. He has never experienced any trouble with a motor of this type, but has had trouble with chain drives. Concerning space for expansion, Mr. Lake asserted that a very small clearance takes care of the thermal situation, but that it is important that a motor be built around its true electrical center with respect to the stator. If the true center is not found during the construction of the motor, there is bound to be a thrust against one bearing or the other causing undue heating and power consumption. Ball-bearing motors are usually constructed properly with respect to the electrical center.

Paul D. Hatley, master mechanic, Mollohon Plant, Kendall Co., Newberry, S. C., elected chairman of Master Mechanics Division of S.T.A.

Loom motors can be changed from 220 to 550 volts, it was agreed, without any special difficulty. However, it was stressed that such a change would have to be made in all the motors because of the difference in the circuit.

Room temperature has some effect on power consumption, was the consensus, as power loads are heavier early in the morning and especially on Monday mornings. It was suggested that if the mill be kept warm over the week-end, the peak load would be lower on Monday morning and considerable saving would result in power costs. Mr. Nichols brought out that lubrication has much to do with this morning peak load, in that the friction on machinery which has been standing idle is very great until an oil film is built up on the moving parts. This is particularly true of lineshafting. No one had actual figures to show whether or not the cost of keeping the mill warm over the week-end would be offset by the power savings on Monday at the start.

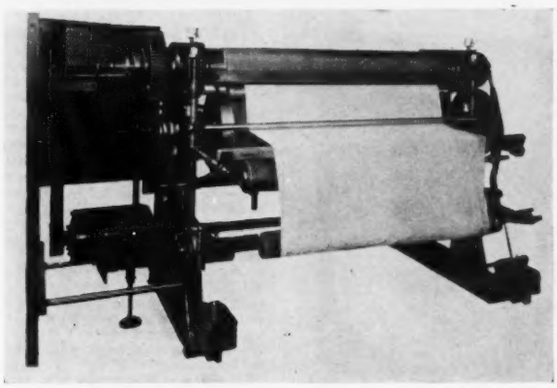
Free oxygen in return lines can be liberated by a combination of chemicals and feedwater treatment. Milton Merl, associate editor of *Southern Power Journal*, mentioned that sodium sulfite is often used to combine with free oxygen in the lines. Mr. Watts, in reply to a question by the chairman, pointed out that the oxygen problem can be handled with any number of different chemicals. He added that it would be well to note the condensate as it returns, since it is on the acid side and has very definite corrosive properties.

Election of Officers

Paul D. Hatley, master mechanic, Newberry Cotton Mills, was elected chairman to serve during the next fiscal year. An executive committee of five members was elected to serve in an advisory capacity to the chairman. The members are R. F. Nichols, Newberry, S. C.; M. E. Lake, Charlotte, N. C.; E. E. Edmundson, Mooresville, N. C.; H. H. Iler, Greenville, S. C.; and Fred Tindall, Inman, S. C. Mr. Nichols and Mr. Lake are to represent those members interested in steam and electricity, respectively.

A feature of the meeting was a discussion of the relations a master mechanic should have with his superiors. It was agreed that it is advisable to study the psychology of one's superiors in order to get the most benefit from interviews related to improvement of the mechanical department. David Clark, editor of *Textile Bulletin*, said that the ordinary management does not pay sufficient attention to the work of the master mechanic because a steam plant, for example, will operate whether or not it is being run efficiently. There are very few ways by which the efficiency of a master mechanic can be measured, he said. In contrast to this, Mr. Merl pointed out that with proper records it is a simple matter for the master mechanic to show what he has been doing toward increasing the efficiency of his department. For example, it should be easy to compare with previous years the amount of steam produced per pound of coal, the number of shutdowns in various departments, yardage produced per kilowatt, etc.

NEW MACHINERY & PROCESSES

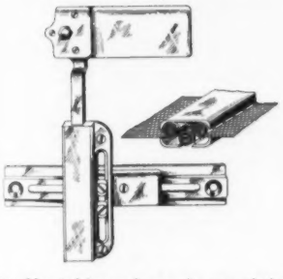


Embossing Machine

Hinneken Machine Co., Inc., 199 Godwin Ave., Paterson, N. J., has brought out an embossing machine which has a steel roll 8 in. in diameter. The purpose of the large roll is to secure equal pressure at all points. Bearings are of the heavy-duty type and are oiled automatically. To avoid shifting of the pattern and consequent cutting of the goods, both steel and paper rolls are micro-set to fine adjustment. The use of alloy, heat-treated steel in the gears is said to increase the life of the paper roll.

Adjustable Temple and Roller

Silk City Metals Coating Co., 62 Ryle Ave., Paterson, N. J. has placed on the market a loom temple that is particularly suitable for weaving rayon, but which is adjustable to handle all types of fibers and weaves. The temple has three rollers, and the material passes between the bottom roller and the two top rollers. The bracket holding the top rollers



is adjustable and can be regulated to hold any weave.

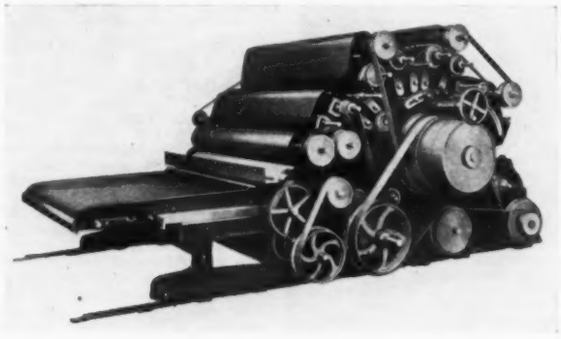
While different types of rollers are employed for different classes of textiles, the company has also developed a new roller for handling fine fabrics. The roller consists of a rubber-and-cord combination on a dogwood or brass core. The gripping surface is of cotton cord, spirally braided on a rubber cushion, but the rubber does not come in contact with the fabric held by the roller.

Steam-and-Water Mixer

Hot water of any desired temperature can be produced automatically at the point of usage by means of the self-operating steam-and-water mixer announced by Sarco Co., 183 Madison Ave., New York. The device incorporates a three-way valve which mixes steam and water in the proportions desired, a water injector, and a temperature regulator in one compact unit. Nozzle-type injectors are used to insure silent operation.

Card for Opening Hard-Twist Waste

A new card for completing the opening-up of garnetted hard-twisted worsted waste threads has been developed by Richard Hartmann, of Germany, and is being introduced to this country by American Textile Engineering, Inc., Kearny, N. J. It is intended to open up the hardest ends by a gentle action which causes a minimum of fiber injury, and thus to reduce difficulty at the card and to help preserve the card clothing.



The lickerin section, which is mounted on wheels resting on a track, embodies two lickerins in tandem, each covered with metallic wire, and a small carding section which spreads the stock on the slowly revolving main cylinder of the card. The wires of the card clothing on this cylinder point in the direction opposite to its rotation.

The stock now encounters three groups of carding rolls in succession, all located above the main cylinder. Each group consists of two carding rolls which work against each other and against the cylinder, moving, of course, with a higher surface speed than the cylinder. From the second of these rolls, the stock is raised by a special clearer roll located above the point of tangency between the two carding rolls, and so is removed in large part by the first roll and carried backward. A small stripper located ahead of the first roll returns the stock to the cylinder. It is finally removed directly from the cylinder by a doffer comb that delivers the material to an apron, which in turn piles it up in loose form.

Heater for Sprinkler Valves

Freeze-ups of valves on dry-pipe sprinkler systems can be prevented by the installation in each valve house of an automatic, electric space heater manufactured by Rockwood Sprinkler Co., 38 Harlow St., Worcester, Mass. The heater consists of heating element, control thermostat, thermometer, pilot light, and a 3-in. outlet box mounted on a pressed-steel frame. The heating element is protected by a perforated metal guard, and the entire unit is insulated. The Rockwood heater can also be used in other ways about the plant, such as the heating of insulated wall boxes containing soda and acid extinguishers which are kept in unheated buildings.

Air-Circulating and Humidifying System

Better working conditions and approximately 25% less ends down in the spinning room are features of a new air-circulating and humidifying system devised by Bahnson Co., Winston-Salem, N. C. Air trunks extend from windows almost to the center of the room, their number depending on the size of the room. At the window end there are two dampers, one to control the influx of outside air and the other to control recirculation of air within the room. The dampers are so arranged that when one is open the other is closed. A fan propels the air in the trunk, which has openings on one side. When an installation is made, the openings in the side of the trunks on one side of the room are made to point in one direction, while those on the other side of the room are pointed in the opposite direction, so that there is a circulation of air around the room. The humidifiers, which are placed on posts in the usual manner, point in the direction of the air current to avoid cross currents and wet spots.

Relative humidity, room temperature, and dew point are all controlled. Room temperature is governed by the fans and the dampers in the trunks. When the temperature rises, as many fans as necessary to handle the condition start up and as much cool outside air as required is admitted. This hook-up also provides for dew-point control.

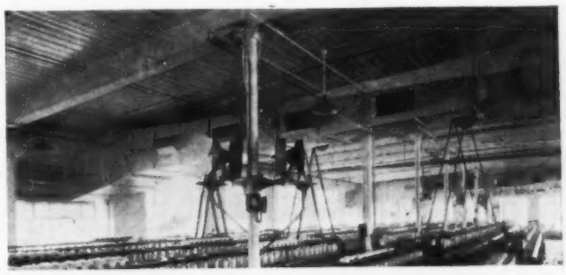
Remote Valve Control

Inaccessible valves can be operated from a central station several hundred feet away by means of the remote hand control developed by Foxboro Co., Foxboro, Mass. A turn of the knob enables the operator to adjust manually the degree of opening of an out-of-the-way valve without moving from his station. Precision of the valve setting is featured, and it is stated that, when the control is used in conjunction with a Stabilflo valve, the flow can be changed by less than 1%.

Needle Locator for Carpet Manufacture

Needles used in the manufacture of rugs and carpets may break and become deeply imbedded in the finished product, and General Electric Co., Schenectady, N. Y., has developed an electrical device to locate them. The presence and exact location of the steel barb can be ascertained by passing the carpet through a frame twice in directions at right angles.

The device consists of a test coil, a motor-generator set, and an amplifier. Power is supplied by the motor-generator to the test coil, which has two primary and two secondary windings. The secondary windings of the test coil are connected differentially, or opposed. The secondary circuit is balanced before an inspection run. The carpet passes through a narrow slit, going through first one set of primary and secondary windings and then the other. The



passage of a broken needle causes a distortion in the magnetic field and produces an unbalanced voltage in the secondary circuit. This unbalance is amplified and causes signal lights to operate. Lengthwise and transverse passes of the carpet detect the needle along two lines which intersect.

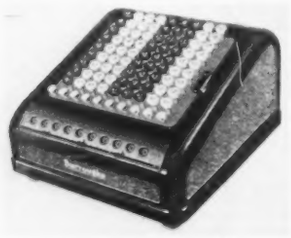
Yarn Guides

A line of guides and cleaner guides designed to reduce yarn damage and result in economy and improved yarn quality is announced by Lestershire Spool & Mfg. Co., Johnson City, N. Y. The new line is made of Lesterized Nitralloy Steel, which was specially developed to resist wear. Friction is further reduced by using a roller in the guides.

The guides and cleaners are made in adjustable type or fixed type for any size of opening desired.

Office Equipment

Burroughs Adding Machine Co., 6745 Second Blvd., Detroit, Mich., has announced a new fanfold biller and a redesigned single-register calculator. The function of the fanfold biller is to write multiple sets of continuous forms, such as bills, orders, etc., and to shift the carbons from one completed set to the next one to be written. The feature of the new biller is that carbon shifting is accomplished in a single, simple operation. In addition, the biller has an electric



carriage control which returns the carriage either to the left-hand margin or to an intermediate position.

Improvements in the single-register calculator are listed as follows: Better key action; clearance of the dials for the next problem has been speeded up; new key tops provide more comfortable finger-tip control; streamlined appearance.

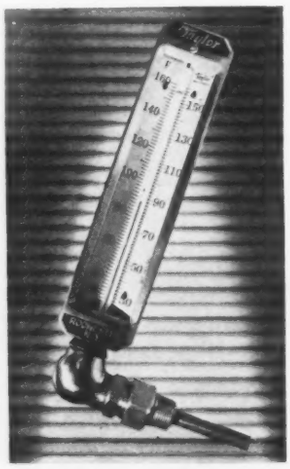
Unit Air Cooler

Cooling air on the same principle as heating air with a unit heater is made possible by the cold-water-type unit cooler placed on the market by Modine Mfg. Co., Racine, Wis. The unit, through which cold water circulates, is suspended in a room and is equipped with a motor and fan which draw the room air through the unit, absorbing heat and moisture, and returning cooled and freshened air into the room. By merely loosening a lock nut and two unions, one can turn the unit in any direction without changing existing piping connections and can direct the air stream wherever desired.

Since the cooler almost duplicates the construction of a unit heater, it can be adapted to all-year-round utility. New developments in design, which eliminate the use of a moisture eliminator, make it unnecessary to remove this device before using the unit for heating. During the heating season, hot water or low-pressure steam can be circulated through the unit.

Improved Thermometer

Readability has been the objective of Taylor Instrument Cos., Rochester, N. Y., in designing a new mercury-in-glass industrial

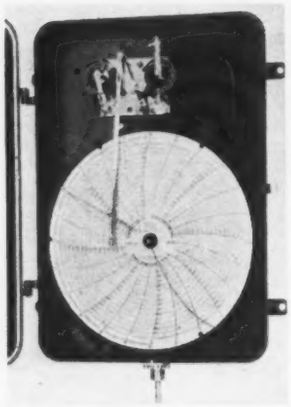


thermometer. Binoc, a new thermometer tubing employed in the instrument, is stated to have the following advantages: more than twice the accustomed angle of vision combined with high magnification of the mercury column; binocular vision at normal or greater-than-normal distances; triple-lens construction which gathers light and concentrates it behind the mercury column; empty-bore reflections eliminated by the lens angle and the extended opaque background.

Small-Bulb, Gas-Filled Record Thermometer

A gas-filled recording thermometer, having a small temperature-sensitive bulb for long lengths of connecting tubing, has been developed by Bristol Co., Waterbury, Conn. The instrument is offered for measuring temperatures between 60 and 1,000° F., where tubing lengths as long as 100 ft. are required. The thermometer is fully compensated and is designed so that temperature changes in the case of the instrument and along the tubing are corrected, independently, by means of a compensating device.

Two Class 111 measuring elements connected through a compensating mechanism, are mounted in a rectangular case. Two capillary tubes, filled with the same gas, run from each element through one armor tube to the sensitive portion of the bulb. Only one capillary tube is connected with the temperature-



sensitive bulb; the other is closed at the bulb end. Both capillary tubes, being adjacent, are subjected to the same temperature changes. Through the compensating mechanism, the tube and the element not connected with the bulb correct for temperature changes along the connecting tube and in the case.

Motors of New Design

A new design of riveted-frame, squirrel-cage, polyphase induction motor has been announced by General Electric Co., Schenectady, N. Y. Coordination of design permits the different modifications of motors in the line to be used interchangeably for many types of power supplies and for various applications requiring open, sleeve or ball bearing, inclosed, inclosed fan-cooled, splashproof, vertical motors, etc.

An insulation system, described as being "built from the inside out," is employed for the stator-coil windings, which are of the random-wound type, with joints at the connections fused instead of soldered. Recently developed insulating materials are used.

Convenience features include: two-part conduit boxes which provide ready access to leads and which can be mounted in any one of four positions; handy knock-off ledges on end shields, permitting easy disassembly; adequate wrench room for removing end-shield cap screws; ball bearings provided with pressure grease fitting and relief plug; and sleeve bearings equipped with oil-filler gage.

New Publications

Textile World Yearbook and Catalog, Textile World Publications, McGraw-Hill Publishing Co., New York; 497 pages; one copy free to every American textile mill; additional copies to mill or employee, if ordered on company letterhead, $2.50; to other than textile mills, $5.00; one copy free to every foreign mill willing to pay customs charge.

The 1936 volume, combining a greatly enlarged yearbook (handbook) section, the consolidated catalogs of leading suppliers to textile mills, and a really complete buyers' guide, is now available.

An important portion of the book is the 44-page section crammed with reference data in the form of useful tables, charts, and formulas for cotton, wool, rayon, silk, knitting mills, and processing plants. The subjects covered in this section range from tests for identifying fibers to tables for calculating steam cost.

Another valuable section lists all the standards which have been developed for textile materials by trade associations and government departments.

The yearbook also contains a bibliography of textile books, including those both in and out of print, with prices of the former and names and addresses of the publishers; technical and statistical surveys of the previous year; descriptions of new equipment; and directories of textile associations and schools.

The catalog section comprises 300 pages, and lists, describes and illustrates the equipment, supplies and chemicals offered to the textile industry by over 225 manufacturers. The complete buyers' guide is not limited to advertisers in the book, and lists, by product and alphabetically, manufacturers of textile machinery, equipment, supplies and chemicals.

Davison's Textile Blue Book; Davison Publishing Co., New York; Office edition, $7.50, Handy edition, $5.00.

Davison's Textile Blue Book for 1936 with which is merged Dockham's American Report and Directory contains reports covering the following: 2419 cotton mills; 964 woolen and worsted mills; 161 carpet and rug mills; 1577 rayon and silk mills; 2114 knitting mills; 161 jute, linen, flax, sisal and hemp mills; etc. Looms, spindles, cards, combs and other machinery has been carefully tabulated by states and are shown in special tables. The contents is broken down into the following groups for ready reference: cotton mills; woolen and worsted mills; rayon and silk mills; knitting mills; jute, linen and flax mills; Canadian mills; Mexican mills; dyers and finishers; mills with dye houses; commission merchants; converters; yarn dealers; raw, thrown and rayon silk firms; cotton dealers(both domestic and foreign); cotton warehouses; wool dealers; linter dealers; waste dealers and manufacturers; wholesale rag and remnant dealers; textile supplies; new textile mills; classified directory of mills.

Handbook of Colorimetry; Prepared by the staff of the Color Measurement Laboratory, Massachusetts Institute of Technology, under direction of Arthur C. Hardy, Technology Press, Cambridge, Mass.; 1936; $5.

The primary purpose of this handbook is to indicate the physical method of color specification and to supply tables and charts which facilitate this specification. The book reviews the subject of colorimetry and discusses the characteristics of light sources, the spectrophotometric measurement of colored materials, and the laws of color mixtures. It then considers the interpretation of data obtained from the physical measurement of color and takes up the graphical representation of colorimetric data. This handbook is the result of three years' work by the authors. It is "required reading" for those who are interested in the scientific measurement of and specification of color in the laboratory and in industry, and particularly for those engaged in fundamental research in the field of colorimetry.

A.S.T.M. Standards on Textile Materials; prepared by Committee D-13 on Textile Materials; published by American Society for Testing Materials, 260 S. Board St., Phildelphia, Pa.; $2.00.

The 1936 edition of this book, which gives in full the 42 standards established by Committee D-13 to date, contains many revi-

sions and improvements. The standards are now so arranged that those of general application appear first, followed by those relating specifically to cotton, woolen, worsted, rayon, silk, asbestos, etc. The appendix contains a complete set of photomicrographs of common textile fibers; TEXTILE WORLD'S enlarged yarn-number conversion table; a psychrometric table for relative humidity; proposed methods of test for felt and for total iron in asbestos textiles; proposed method of correction of breaking strength to standard regain; abstracts of papers presented before the committee; and personnel of the subcommittees. For a list of subjects on which new standards have been developed, see report of D-13's recent meeting, reported elsewhere in this issue.

Textile Fibers and Their Use, 2nd edition; Katharine P. Hess; J. B. Lippincott Co., Philadelphia, 1936; $2.40.

Intended primarily as a text book to give the student definite information which will enable her to select and use textiles more wisely, this work should also be of interest to other classes of readers who desire a general knowledge of textile manufacturing operations with particular reference to their influence on the quality of the fabrics produced. Following the first edition in outline, the present one has been rewritten and expanded to include the developments in textiles which have occurred in recent years. It is remarkably well up to date, including mention of such operations as: Sanforizing, the Frosted Wool process, use of synthetic resins to produce crease-resistant finishes, etc. Care has been taken also to insure the acuracy of technical information given in the book.

Directory of Commercial Testing and College Research Laboratories; U. S. Department of Commerce; Government Printing Office, Washington, D. C., 15c.

This booklet lists geographically 244 commercial testing laboratories and 200 college research laboratories.

Compounding Ingredients for Rubber; Complied by the editors of India Rubber World, New York; 1936; $2.50.

Growing use of latex in the textile industry makes this book of interest to many of our readers. This is true particularly of the second part which is devoted to descriptions of the various ingredients in latex work. Materials are grouped by their trade names alphabetically in functional classifications, giving data on composition, source, application, properties, methods of use, etc.

Effect of Yarn Twist on the Properties of Cloth; National Bureau of Standards Research Paper RP 861; by H. F. Schiefer and D. H. Taft; Superintendent of Documents, Washington, D. C.; 5 cents.

That the breaking strength and elongation at rupture of cloths vary approximately with the strength and elongation at rupture of the yarns from which the cloths are woven has been determined by the National Bureau of Standards in a study of the effect of yarn twist on cloth properties. Tests on plain and 2/2 basket weaves having 34 ends and picks of 10s cotton yarn showed that the direction of twist makes no difference, that plain weaves have greater strength and elongation than basket weaves, and that the breaking strength indicated by the grab test is higher than that indicated by the strip test. "Fabric assistance," which is the percentage increase in strength of the cloth over that of a multiple strand of the same number of warp or filling yarns, was found to vary inversely with the strength of the yarn and to be greater in the plain weave. In the conducting of the test, twist multipliers were varied from 2.5 to 9.

Business News

Atwood Machine Co., Stonington, Conn., has elected Franklin R. Hoadley as president. Mr. Hoadley, who will assume his new duties on Jan. 1, is at present vice-president of **Farrell-Birmingham, Inc.**, Ansonia, Conn., builders of heavy machinery for many lines of industry.

Proctor & Schwartz, Inc., Philadelphia, has selected Stanley Whiteway to head its reorganized advertising department. Mr. Whiteway was formerly on the staffs of the Washington *Herald* and Washington *Post*.

Whitin Machine Works, Whitinsville, Mass., has added A. B. Moss., Jr., to the sales and service department at the Charlotte, N. C., office. Mr. Moss was formerly assistant manager of Bemis Bros. Bag Co., Talladega, Ala., and prior to that was with Merrimac Mfg. Co., Huntsville, Ala.

Roger W. Cutler, Boston, has opened an office in the Woodside Bldg., Greenville, S. C. For the present Mr. Cutler will be at the new office, while Lewis C. Briggs, 3rd, will manage the Boston office.

L. M. Hartson Co., North Windham, Conn. has appointed John G. Webb as Southern representative. Mr. Webb, who is the son of T. H. Webb, former president of the American Cotton Manufacturers Association, will make his headquarters in Hillsboro and Concord, N. C.

H & B American Machine Co., Pawtucket, R. I., has announced that Otto A. Belger, formerly proprietor of Belger Co., Watertown, Mass., has joined the development and research department of the organization as part of a general program of expansion and reorganization. Mr. Belger received his technical education in Germany and, after several years in England, came to this country in 1913 to introduce the aspirator for combs and, later, the continuous card stripper. Among the more recent devices developed by Mr. Belger are the Belger automatic roving tester, the Belger sliver tester, a roll-spacing determinator, and several types of simplified long-draft attachments for roving and spinning frames. Henceforth, all Belger testing equipment will be sold and serviced by H & B American Machine Co.

Atlas Powder Co., Wilmington, Del., has plans for a new plant for the production of special chemicals for the textile and other industries.

Colorcable Corp., 30 Rockefeller Plaza, has been formed to take over the patents on the device for transmitting color samples by cable or telegraph. Officers of the concern are: Howard Ketcham, president; Walter Spry, vice-president; Walter T. Neville, secretary.

Foster D. Snell, Inc., Brooklyn, N. Y., has opened a branch office and laboratory at 215 North Calvert St., Baltimore, Md. Theodore M. Miller will be in charge of the branch.

Industrial Colloids & Chemicals, Inc., White Ave. & 11th St., Knoxville, Tenn., has completed the installation of equipment for the processing of special chemicals, such as new ester products including aryl and alaphatic (fatty) alcohols, new condensation products, new polymerization products, and the like. Robert Cowan is serving as executive vice-president of the company and G. M. Ellis as secretary and treasurer.

Chas. H. Stone, Inc., Charlotte, N. C., is celebrating this month, the tenth anniversary of its organization as a manufacturer and distributor of textile chemicals. Since this company received its first order for chemicals (from Statesville (N. C.) Cotton Mills) on Nov. 1, 1926, it has had a record for consistent growth. This year warehouses were opened in Greenville, S. C., and Greensboro, N. C., and facilities were further expanded to care for more than 100 different products now being made in the Charlotte plant. Eugene J. Adams, formerly southern representative for Soluol Corp., is now with Charles H. Stone, Inc. He has been put in charge of the newly opened Greenville, S. C., office and warehouse.

Sonoco Products Co. of Canada, Ltd., Brantford, Ont., branch of the parent plant at Hartsville, S. C., has made a number of changes in the executive staff of the Canadian plant. R. J. Fletcher, assistant to P. L. McCall, the vice-president and manager, has been appointed manager, in addition to a director of the Brantford branch. J. C. Westaway, of the W. J. Westaway Co. Ltd., who was formerly a director and secretary of Sonoco Products of Canada, has been chosen as vice-president and a director of the firm.

L. B. Holliday & Co. Ltd., dyestuff manufacturers of Huddersfield, Eng., have re-opened their Canadian branch in a new location at 127 St. Peter St., Montreal, Que.

Scholler Bros., Ltd., Canada, manufacturers of soaps, softeners and specialties for the textile industry, have commenced the erection of an addition to the plant.

TEXTILE WORLD ANALYST

TEXTILE WORLD'S index of textile mill activity shows that the rate during first three quarters of 1936 was 17% above that for the corresponding period of 1935, and the same percentage above the activity during the corresponding period of a "normal" year (1924–31 average.)

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufacturers, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

Date	—Cotton Index Numbers— Cotton	Yarns Gray	Yarns Colored	—Wool Index Numbers— Wool	Tops	Yarns	Cloth	Silk Index Raw Silk	Rayon Index
1923-25	100	100	100	100	100	100	100	100	100
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	58	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
July 1935	61	68	65	69	56	59	70	89	20	23
Aug. 1935	58	68	66	69	56	59	70	89	23	24
Sept. 1935	55	66	68	69	58	60	70	89	25	24
Oct. 1935	57	68	68	69	60	61	73	92	27	24
Nov. 1935	60	70	69	72	62	65	75	92	27	24
Dec. 1935	60	71	69	72	64	66	76	92	26	24
Jan 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26

TEXTILE WORLD'S

Cotton Digest

THE cooperative effort of mills, through the various associations, to improve the quality of cotton in the Southeastern States deserves far more publicity than it has received to date.

This work is especially outstanding in Georgia where over 100 communities have been persuaded and educated to raise one-variety cotton (1 to 1 1/16 in.) and now furnish nearly all of this class used by Georgia mills. In addition, Georgia manufacturers have cooperated with Federal and State specialists toward producing better cotton, and many individual mills have given financial and marketing support to neighboring communities.

Alabama and Georgia are also organizing one-variety communities with the support of Federal and State agencies, and of the manufacturers. The Cotton Manufacturers Association of South Carolina sponsors an annual five-acre contest which has contributed materially toward improving the quality of cotton produced in that State.

The most important thing needed in connection with this type of effort is more of the same.—*Editor.*

Hall Heads Combed Yarn Association

R. Dave Hall, secretary and assistant treasurer of Stowe Thread Co., Belmont, N. C., was elected president of the Southern Combed Yarn Spinners Association at the annual meeting held Oct. 8 at Gastonia, N. C. Other officers were named as follows: R. B. Suggs, secretary and treasurer of Acme Spinning Co., Belmont, N. C., first vice-president; C. D. Welch, vice-president and agent of Cramerton Mills, Cramerton, N. C., second vice-president. Directors elected to serve three years included Carl A. Rudisill, Cherryville, N. C., S. P. Stowe, Belmont, N. C., T. H. McKinney, Mt. Holly, N. C., and J. A. Wilcox, Charlotte, N. C., R. D. Hall was made chairman of the planning committee. Fred M. Allen, secretary and treasurer of the association, and Mildred G. Barnwell, executive assistant, were reelected to their respective offices.

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Upland Cotton Shows Improved Quality

Upland cotton of the southeastern States has undergone a physical transformation in recent years, and gives promise of offering Delta and other western cottons strong competition in the future. This has been brought about by combined efforts on the parts of manufacturers associations and Federal and State agricultural departments. Accomplishments to date may be summarized as follows:

Georgia. More than 100 one-variety communities are producing nearly all of the 1 to 1 1/16 in. cotton required by Georgia mills. The manufacturers association is cooperating with the Government specialists every way possible, and many individual mills are giving financial and marketing support to local communities.

The Carolinas. Manufacturers are still encouraging the growth of better quality cotton by sponsoring five-acre contests etc.

Alabama and Mississippi. One-variety communities are being organized through Federal, State and mill cooperation.

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N. C. Mfrs. Assn. Meets At Pinehurst

The annual meeting of the Cotton Manufacturers Association of North Carolina was held Nov. 5 and 6 at the Carolina Inn, Pinehurst, N. C. O. Max Gardner, former governor of North Carolina, and A. J. Maxwell, commissioner of internal revenue in N. C., were scheduled to be the principal speakers. Details of the meeting will be carried in the next issue.

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Markets Continue Strong

Cotton cloth markets continued strong all month with some sources declaring gray goods mills are in best position since 1923. Government orders and notices of plans for further buying helped strengthen prices, as did growing rumors of eventual wage increases throughout industry. Increased crop estimate did not seem to have adverse effect on market. Print cloths continued to steal the show with prices creeping upward. Advances were noted in most other lines also, especially in denims and percales. The month closed slightly slower but with prices strong.

The cotton yarn markets were active all month but not as spectacularly as the cloth market. Emphasis continues on deliveries for this year although many orders were placed through the first quarter and some through the second quarter of 1937. Combed yarn mills remained in an excellent position, with production and sales in good balance. A scarcity of carded weaving yarns was noted. Prices in knitting yarns did not keep pace with weaving yarns but are expected to go higher. Two-ply combed peeler mercerized advanced 1 to 2c. lb., the first general advance since July.

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Prices and Activity

Key cotton prices of Nov. 2 and a month ago, contrasted with those of the last two years follow:

	Nov. 2 1936	Oct. 1 1936	Nov. 1 1935	Nov. 1 1934
Spot Cotton N. Y...	12.08	12.64	11.40	12.25
Ditto, high previous month.....	12.64	12.63	11.40	12.65
Ditto, low previous month.....	12.01	11.87	11.05	12.35
10s hosiery cones....	26	25½	29½	.27½
10s/2 carded skeins..	26	25½	28½	.28
20s/2 carded peeler warps.....	29½	29½	31½	.31
60s/2 combed peeler warps.....	55	55	57½	.56½
60s/2 mercerized cones.....	69	68	72	.70½
37 in., 3-yd. drill....	9 1/16	9	9 1/16	9¼
38½-in. 64x60s.....	7 13/16	6¾	6¾	6¼
36-in. 4-yd. 56x60s..	7 13/16	7 1/16	8¼	7
Denim, 2.20s.....	14	13½	9 15/16	15

Statistics of particular interest to cotton manufacturers showing Sept. operations and the raw material situation:

Spindle activity.....	125.8% capacity, or 8,088,255,427 spindle hours
Cotton consumed	629,727 bales
Cotton exported	569,624 bales
Cotton imported	9,162 bales
Cotton ginned to Oct. 1....	6,030,940 bales

August operations for comparison:

Spindle activity	115.8% capacity, or 7,573,009,997 spindle hours
Cotton consumed	574,289 bales
Cotton exported	182,487 bales*
Cotton imported.....	12,671 bales
Cotton ginned to Sept. 1..	1,373,868 bales
Cotton ginned to Oct. 18..	8,567,676 bales

* Decrease in exports due to shortage.

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933..	21.4	September, 1935	17.9
October, 1933.	19.1	October, 1935..	17.7
January, 1934	18.4	November, 1935.	16.4
April, 1934...	17.6	December, 1935.	16.2
July, 1934....	15.5	January, 1936..	17.2
August, 1934..	16.6	February, 1936.	16.5
September, 1934	18.6	March, 1936...	15.5
October, 1934..	17.4	April, 1936....	14.3
November, 1934.	15.8	May, 1936.....	14.3
December, 1934.	16.2	June, 1936.....	15.3
January, 1935..	16.2	July, 1936.....	16.9
February, 1935.	16.0	August, 1936..	18.0
March, 1935...	15.9	September, 1936	18.4
April, 1935....	16.1	October, 1936..	21.2
May, 1935.....	16.0	Oct. 7 ..	19.9
June, 1935.....	16.5	Oct. 14 ..	20.4
July, 1935....	15.2	Oct. 21 ..	22.0
August, 1935...	17.1	Oct. 28 ..	22.3

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933...	23.5	September, 1935	15.4
October, 1933..	20.0	October, 1935..	15.8
January, 1934..	18.3	November, 1935.	16.3
April, 1934....	15.9	December, 1935.	16.3
July, 1934.....	14.7	January, 1936..	18.4
August, 1934...	15.3	February, 1936.	17.5
September, 1934	15.6	March, 1936...	16.3
October, 1934..	14.6	April, 1936....	15.6
November, 1934.	13.5	May, 1936.....	14.8
December, 1934.	13.5	June, 1936.....	14.6
January, 1935..	13.5	July, 1936.....	15.0
February, 1935.	13.9	August, 1936..	16.5
March, 1935...	14.4	September, 1936	16.5
April, 1935....	14.1	October, 1936..	17.2
May, 1935.....	13.8	Oct. 7 ..	17.1
June, 1935.....	14.5	Oct. 14 ..	17.0
July, 1935.....	14.3	Oct. 21 ..	17.3
August, 1935..	15.3	Oct. 28 ..	17.4

Cotton Industry Briefs

Association of Cotton Yarn Merchants at a recent meeting in Philadelphia re-elected Frank E. Slack president. Fred A. Rakestraw, of Hdye-Rakestraw Co., was made treasurer, and T. Ewing Montgomery, attorney, was named secretary.

Pepperell Mfg. Co. recently announced several important changes in its executive merchandising set-up: Randall Durfee will hereafter devote his time to purchasing cotton cloth requirements, a broadening of the functions he previously performed. He also will be responsible for selling all gray goods merchandised by the company. The styling of wash fabrics and percales, formerly one of Mr. Durfees duties, will be carried on by Charles Thresher under the direction of Burnet Valentine, manager of the department. Maude Scholle, fashion adviser, will cooperate with him. Albert L. Ziegler has been placed in charge of spun rayon development under the general supervision of Mr. Valentine.

About 20 textile executives from North and South Carolina, Boston, and Providence, R. I., held a three-day meeting recently at Asheville, N. C. Also, there were present a number of leaders in related enterprises. No formal program was carried out, but there were said to have been a number of informal discussions of possible revival of world markets, the Robinson-Patman bill and other problems of the industry.

The position of domestic cotton is extremely favorable due to the high-rate of mill activity, according to a recent press release of the New York Cotton Exchange Service.

Participants in the recent Southern Chemurgic Conference, held recently at Lafayette, La., were urged by Charles K. Everett, manager of the new uses section of the Cotton Textile Institute, to join an "all-South" drive to promote greater consumption of cotton.

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Cotton Mill News

Dwight Mfg. Co., Alabama City, Ala., plant, has completed a $200,000 addition, which has been under construction.

Alabama Textile Products Corp., Andalusia, Ala., plant, has begun the construction of an addition, 30 x 120 feet, three stories. The J. G. Scherf Mfg. Co. at Brantley, Ala., is being liquidated and its machinery will be moved to this Andalusia plant.

Anniston (Ala.) Mfg. Co., which has done considerable modernizing lately, recently added another new spinning frame, some new long-draft slubbers and several used cards to balance production. J. E. Sirrine & Co., Greenville, S. C., were engineering consultants.

Dallas Mfg. Co., Huntsville, Ala., is having its steel rolls equipped with the Guillet taper fitted neck, under the direction of the Dixie Spindle & Flyer Co., Charlotte, N. C.

Avondale Mills, Sylacauga, Ala., plant, have purchased a Guillet overhauling system.

Raucher Mfg. Co., Norwich, Conn., has started construction of a one-story mill addition, 19x40 ft., to cost about $1,000.

Sibley Mfg. Co., Augusta, Ga., recently added some dry cans and Sanforizing equipment which necessitated a rearrangement of machinery in the finishing department. J. E. Sirrine & Co., Greenville, S. C., are consultant engineers.

Gainesville (Ga.) Cotton Mills have installed 156 40-in. looms to replace a like number of 32-in. looms.

Strickland Cotton Mills, Valdosta, Ga., are carrying out expansion and improvements in mill at Remerton, Ga., including installation of an additional slasher and three more slubbers. Recently 45 Saco-Lowell spinning frames and two slubbers were installed.

Louisville (Ky.) Textiles, Inc., have moved and overhauled 30 spinning frames.

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Clyde Fabrics, Inc., Newton, N. C., have had two of their nappers equipped with vacuum cleaning systems.

Sellers Mfg. Co., Saxapahaw, N. C., recently installed ten modern, long-draft spinning frames and a new 825 hp. Superior engine, which required the enlargement of the engine room.

Carolina Cotton & Woolen Mills, Spray, N. C., have approved plans for new one-story addition to their Wearwell Bedspread Mill, Leaksville, N. C., and will remove equipment from part of local Karastan Rug Mills, another company interest, to new unit as soon as completed, using vacated space for expansion in rug mills. Entire project is reported to cost over $40,000.

Appleton Co., Anderson, S. C., is completing a four-story cloth warehouse, 80x140 ft., containing a sprinkler system installed by C. M. Guest & Sons and two elevators by Park Elevator Mfg. Co. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Kendall Co., Wateree plant, Camden, S. C., has had the Textile Shop, Spartanburg, S. C., install ventilating system in its picker division.

Springs Cotton Mills, Chester. S. C., have plans for new two-story addition to Gayle mill, 100x100 ft. Cost over $65,000 with equipment. A recent 50x125 ft. addition now houses Barber-Colman warper and about 100 looms.

Clifton (S. C.) Mfg. Co. has equipped its 200-spindle spooler with the vacuum lint and dust collector, the work being under the direction of the Textile Shop, Spartanburg.

Woodside Cotton Mills Co. has rearranged the looms in its Greenville, S. C., plant, and is reroofing all mills in the group. J. E. Sirrine & Co., Greenville, S. C., are consultant engineers.

Springs Cotton Mills, Lancaster, S. C., is adding a story to its weave shed. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Industrial Cotton Mills, Rock Hill, S. C., has constructed a new steam plant to generate power for the operation of the gray goods mill and dye plant. Exhaust steam from the turbines is used in the dyeing department. A modern water-treating plant has been built to furnish water of the right composition for the new high-pressure boilers and dye plant. A new 80x200 ft., two-story cloth room is being completed, equipped with Jones sprinkler equipment. One elevator has been installed by Park Elevator Mfg. Co. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Startex Mfg. Co., Tucapau, S. C., is improving the former Tucapan Mfg. Co. plant, including installation of about 40,000 new spindles to replace old equipment and other machinery, including spooling and warping equipment and 1,600 looms; an air-conditioning system will be installed and improvements made in water system, with installation of new 500,000-gal. storage tank. Entire project will cost $500,000. Lockwood Greene Engineers, Inc., is engineer. Startex has revised its pickers into a one-process system, the work under the direction of the Aldridge Machine Co., Greenwood, S. C.

Texas Textile Mills, Waco, Tex., have begun an expansion and improvement program at local mill, including installation of high-speed spooling, warping and other equipment. About $40,000 will be expended.

Emporia Textile Mills, Inc., North Emporia, Va., has purchased from the Gaston County Machine Co. of Gastonia, N. C., dyeing equipment, which will be installed in a building now under construction.

Powdrell & Alexander of Canada, Ltd., Cornwall, Ont., are extending their plant for additional bleaching and finishing space.

Canadian Cottons, Ltd., Cornwall, Ont., have let general contract to Anglin-Norcross, Ltd., Montreal, Que., for five-story addition, 105x130 ft., to local Canada Mill. Cost over $100,000.

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Cotton Financial Notes

Lowe Mfg. Co., Huntsville, Ala., will be offered at sale Nov. 17 and 18. There are 160,000 sq. ft. manufacturing space and 23,000 sq. ft. warehouse space. The sale will include waterworks system, 176 houses, and 100 building lots.

Samoset Cotton Mills, Talladega, Ala., will be operated on code hours and wages beginning Nov. 9, says John G. Chapman, general manager. The mill will run on a 40-hour a week basis with a $12 minimum wage for machine tenders. There will be an increase in the number of employes.

Lincoln Textile Corp., Putnam, Conn., has started operations in the former quarters of Perfect Spinning Co. in the Manhasset Mills, Putnam.

Bibb Mfg. Co., Macon, Ga., reports net profit for the fiscal year ended Aug. 31, 1936, of $1,054,543. This compares with a net loss of $251,837 the previous year, and is the best profit showing since 1929. Earnings are equivalent to $5.27 per share on 200,000 shares. This financial statement bears out the optimistic views of W. D. Anderson, chairman of the board, who has created interest in market circles this fall with his series of letters to customers. According to his most recent letter, "the textile industry is on a boom in respect to sales of goods by mills and consumption of cotton." However, it is pointed out further that the prices of cloth are still far too low.

Palmer Mills of Otis Co., Three Rivers, Mass.—Machinery and equipment at this plant was disposed of at public auction in small lots, Oct. 30.

Dilling Mills Co., Kings Mountain, N. C., will be offered for sale at auction on Monday, Nov. 23, at 12 o'clock, noon.

Catawba Cotton Mills, Newton, N. C., in which large interest recently was acquired by J. W. Abernethy, president of Fiber Mfg. Co., Newton, will be remodeled and improved under the new ownership, and operations resumed.

Statesville (N. C.) Mfg. Co., plant and equipment on Diamond Hill was sold to W. L. Allison for $15,000 at auction.

McCallum & Robinson, Inc., Memphis, Tenn., mop manufacturers and operators of the largest cotton pickery in the country, has added the production of Romac bath mats and scatter rugs, in various pastel shades. It also produces Romac yarns.

TEXTILE WORLD'S

Wool Digest

ARTHUR BESSE, president of the National Association of Wool Manufacturers, has contributed to the clarification of a fundamental issue: government regulation vs. government control.

In an address before a conference of 800 business executives at Philadelphia, he defined government regulation as "a type of policing confined largely to the prohibiting of practices which are contrary to the public interest or detrimental to the industry itself." Government control, he pointed out, is quite a different thing; it "involves detailed direction of an enterprise, and is, in reality, but a step from government ownership, although that step may not be taken for some time."

He added that, if industry wanted to avoid government control, it "must devise a form of industrial self-regulation or invoke a type of limited government regulation in order to correct evils which, if they persisted, would lead eventually to an ever-growing demand for governmental interference in the conduct of private business."

As one who has used up a good deal of printer's ink in trying to define the difference between government regulation and government control, we rejoice in Mr. Besse's clear-cut analysis.—*Editor.*

Above is reproduction of a color page designed by the "Milwaukee Journal," Milwaukee, Wis., from wool swatches supplied by Associated Wool Industries. It features some of the important woolens and worsteds in the fall fashion picture.

Associated Wool Industries Changes Personnel

Walter K. Porzer has been appointed general director of Associated Wool Industries, to succeed Ernest C. Morse, and the intensive program of promotional activities adopted by the executive committee at a recent meeting will be carried out under his direction. Mr. Porzer was formerly a member of the staff of Lambert & Feasley, the advertising agency which handles the account of Associated Wool Industries, and has been familiar with the wool promotional campaign since its inception two years ago. Miss Susan Bates, stylist, and Warren Drew, who solicited contributions to the campaign, have resigned from the organization.

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Labor Situation Calms Down

Fears that there would be widespread labor trouble in the woolen and worsted mills were considerably allayed by two events last month. On Oct. 13, the United Textile Workers called a strike at the National & Providence Mills of American Woolen Co., Providence, R. I., demanding a 35-hour week, a 20% wage increase, and changes in work assignments. Later in the week many of the 350 workers petitioned the management to reopen the plant. When this was done on Oct. 26, the workers turned up and operation was resumed without difficulty. As the U. T. W. has been concentrating on the Providence area, its failure in this strike is regarded as evidence that the workers, at present, are primarily interested in working and getting a pay envelope, and not in "issues."

The other event to attract atention was the reopening of the Hayward-Schuster mills around East Douglas, Mass. Although the U. T. W. has voted time after time to remain on strike, about 70% of the operatives have returned to their jobs. An injunction was obtained against the strikers.

The strike at the Portland (Ore.) Woolen Mills, which started on Sept. 22, was brought to a close on Oct. 7 when an agreement was reached between the management and the local unit of the U. T. W. The plant employs about 600. An agreement between management of Lafayette Worsted and the Independent Textile Workers Union Union of Woonsocket, R. I., on Oct. 14, also brought to a close the strike there which had started on Sept. 3.

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Dewey's First Century

A. G. Dewey Co., Quechee, Vt., celebrate this year the 100th anniversary of the founding of the company in July 1836 by Albert Galatin Dewey. In commemoration of this anniversary, an attractive booklet has been published.

From 1836 to 1841, new wool was used as raw material. In 1841 the first rag picker was installed and from that time to the present the mill has continuously made cloth from rags.

The founder died in 1886 and was succeeded by his two sons, John J. and William S. John F. Dewey, a graduate of Lowell Textile School, joined the firm in 1904 as superintendent and held this position until 1931 at which time he was elected president and treasurer, in which capacity he now serves. In 1935 William T. Dewey joined the firm as vice-president and assistant treasurer; it is noteworthy that he is the fourth generation of the same family to be a member of the company. The company now employs 190 people and production has increased to its present capacity of 30,000 yd. per week. Despite its age, the organization keeps young and fit; from 1920 to 1924 over $250,000 was spent in improvements. At the present time the firm manufactures roller cloths for cotton mills, cotton warp overcoatings, cloakings, and jacket cloths for men, women and children.

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Prices and Statistics

Key wool prices of Nov. 2 and a month ago, contrasted with those of the last two years:

	Nov. 2 1936	Oct. 1 1936	Nov. 1 1935	Nov. 1 1934
Fine and fine med. territory.	$0.88	$0.85	$0.68	$0.72
Ohio ⅜s....	.40½	.39½	.36½	.29½
Tops fine 64-66s.	1.13	1.09	1.02	.96½
average ⅜s..	.95	.98	.87½	.80½
high ½.....	.88	.90	.81	.74
Noils, fine.....	.68	.68	.64	.52
½.....	.55	.55	.49½	.41½
2-40s 60s wstd yarn.....	1.55	1.52½	1.45	1.38½
8020 serge.....	1.87½	1.82½	Not quoted	Not quoted

Current statistics on wool consumption and mill activity follow, activity percentage based on single 40-hour shift, 5 days per week. September is a 4-week month; August a 4-week month.

Wool consumed clean equiv.	*Aug.*	*Sept.*
Apparel wool, lbs.....	23,004,000	21,476,000
Carpet wool, lbs.....	8,624,000	9,160,000
Machinery activity		
Looms (50" and wider).	91.7%	83.2%
Carpet looms.....	71.1%	76.9%
Combs.....	132.2%	118.1%
Worsted spindles.....	84.7%	80.6%
Woolen spindles.....	125.1%	112.9%

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Wool Production Off 1% With Stocks 19% Lower

Preliminary estimates of the U. S. Department of Agriculture place a domestic production of wool for 1936 at 361,265,000 lb., a decrease of 1% when compared with 1936.

Stocks of apparel wools were 125,940,000 lb. on Sept. 26, 1936, according to the U. S. Department of Commerce. This is a

drop of 19% in 12 months, comparing with 147,057,000 lb. on June 27, 1936, and 156,694,000 lb. on Sept. 28, 1935. Stocks of tops went in the opposite direction, and there was 26,240,000 lb. on hand on Sept. 26,1936, as compared with 22,257,000 lb. last June and 20,662,000 lb. in September, 1935. Carpet wool stocks were 32,998,000 lb. on Sept. 26, 1936, 34,230,000 lb. in June, and 36,435,000 lb. in September, 1935.

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Wool Goods Take a Spurt

The price advance of 2½ to 5c. per yard last month marked the turning point in wool goods trading and most lines have been active recently. Mill stocks are low and the arrival of a good volume of business has meant an immediate increase in operating schedules. Tropicals and gabardines have furnished a particularly bright spot and no dropping off has been noted to date. Interest in fall women's-wear worsteds has been lacking, due to the end of the season, but the outlook for spring goods is encouraging.

Reports are that chain stores and large retail outfits have bought heavily and that retail sales are running along fairly well at a level above last year. Good business until the end of the year at least is looked for by the mills.

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Consumption Figures Surprise

Statistics compiled by the National Association of Wool Manufacturers show a larger consumption of wool and a greater degree of machine activity during the summer and fall months than had generally been expected. Total consumption of apparel class wools for the first 34 weeks of the year was 173,250,000 lb., as compared with 190,000,000 lb. for a similar period in 1935 and 106,700,000 lb. in 1934. The year 1935, of course, was exceptionally active. As sales in the wool goods market have been good lately, it is expected that 1936, when the record is complete, will turn out to be a very respectable year as far as consumption of raw wool goes.

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New Blue for Army

The War Department adopted a new blue uniform for Army officers last month. A blue uniform for enlisted men is being tested, but it seems doubtful that it will be adopted unless present studies indicate the needs for a change in the olive drab uniform also.

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Wool Goods Briefs

Philadelphia Wool & Textile Association held its annual meeting in Philadelphia on Nov. 6. Arthur Besse, president of the National Association of Wool Manufacturers, was the principal speaker.

Over 3,000,000 lb. of wool went on the auction block in Denver, Col., on Oct. 12. This marks the first time that Denver has taken an important position as a wool marketing center.

H. W. Burton of Moss Rose Mfg. Co. was chosen president of the National Upholstery and Drapery Textile Association, Inc., on Oct. 27 at the annual meeting in the Pennsylvania Hotel, New York, succeeding P. J. Torchiana of Collins & Aikman Corp. G. W. Clement, Jr., of J. C. Atkinson, Inc., was chosen vice-president succeeding Mr. Burton. W. P. Mimnagh of Sidney Blumenthal & Co., Inc., and C. M. Willon of Collins & Aikman Corp. were re-elected treasurer and assistant treasurer respectively. Harvey Willson was re-elected secretary and general manager. Dr. Willard L. Thorp, Director of Economic Research of Dun & Bradstreet, Inc., gave an interesting address concerning the general economic and legislative outlook for industry.

William Whitman Co. has transferred the headquarters of its worsted yarns sales department from Boston to New York. Martin Horchler, for many years handling yarn sales in New York, has been appointed sales manager of the department.

Commercial Production of Lanatin, a "vegetable-fiber wool" made from bast fibers, started early last month in the Oakdale, Conn., plant of Lanatin Corp., 11 West 42d St., New York. Present output, according to officers of the company, is about 20,000 lb. a week. Further details on the product and process of manufacture appeared in the July issue of TEXTILE WORLD.

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JUST BEGINNER

JOSEPH S. LORD has been in the wool industry for 60 years and his friends thought that they should do something about it. And so they gave him a testimonial dinner in Philadelphia on Oct. 14, gave him a silver pitcher, and said a lot of nice things about him. Mr. Lord heads the carpet wool department of Charles J. Webb Sons Co., Philadelphia.

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Wool Mill News

Peerless Woolen Mills, Rossville, Ga., are continuing their improvements program, with project scheduled for completion about Feb. 1, 1937. Work was started last May and will represent a total investment of $500,000 for buildings and equipment.

Madison (Me.) Woolen Mill is building a dike for protection against floods.

Hudson (Mass.) Worsted Co. has let general contract to Earl V. Aldrich, Hudson, for one-story addition to mill, 40x80 ft., and for which superstructure will begin at once. Company is also erecting a four-story addition to plant, which is scheduled for completion in November.

Harlenn Mills, Lawrence, Mass., an interest of Irving Eliasberg, Inc., 440 Fourth Ave., New York, N. Y., are carrying out an expansion and improvement program for increased capacity, including additional floor space and installation of new looms and auxiliary equipment.

American Woolen Co., New York, has placed a contract with Hungerford & Terry, Inc., Clayton, N. J., for what is probably the largest textile mill water filtration plant ever installed in any textile mill. The installation will be made at the Wood Worsted Mill, Lawrence, Mass., and will operate on water from the nearby Merrimac River. The water filtration plant will be constructed of reinforced concrete and will have a daily capacity of 28,800,000 gallons of filtered water.

White Mountain Mfg. Co., Plymouth, N. H., has added another story to its new factory to handle rapidly expanding business.

Phillippi (W. Va.) Woolen Mills is installing 16 additional looms.

Rock River Woolen Mills, Janesville, Wis., are completing a one-story top addition to existing mill, 78x85 ft., for which general contract recently was let to T. S. Willis, Janesville, and will equip for expansion in spinning division, advancing capacity of that department about 20%.

Brock Woolen Co., Simcoe, Ont., plans new one-story addition, including alterations and improvements in present mill. Plant capacity will be increased. Cost reported over $75,000, with machinery.

Hield Bros., cloth manufacturers, have decided to erect an addition, costing about $180,000, to their plant in Kingston, Ont.

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Wool Financial News

Angus Park Mfg. Co., Glastonbury, Conn., has filed a petition in the U. S. District Court at New Haven to reorganize under Section 77B of the Federal Bankruptcy Act.

Assawaga Co., Inc., Killingly, Conn., plans to reorganize under Section 77B of the Federal Bankruptcy Act.

Arlie Mills, Inc., Sprague, Conn., has filed a petition for reorganization under Section 77B of the Federal Bankruptcy Act.

Lisbon Spinning Co., Auburn, Me., has been purchased by John G. Marshall and Erlon M. Dunlap for estimated price of $50,000.

Goodall Worsted Co., Sanford, Me., reports for the fiscal year ending July 31 last net earnings of $841,657 equal to $11.50 a share on the 72,647 shares of common stock in the hands of the public. The company is operating 86 looms on necktie fabrics. The company's stock may be listed on the New York exchange.

Moderation Mfg. Co., West Buxton, Me., owner of the machinery and lessee of the woolen mill, damaged by spring flood, is now seeking to lease the repaired plant.

Hodges Carpet Co., Indian Orchard, Mass., has purchased local mill property now occupied from the Indian Orchard Co. Property heretofore has been held under lease, with option to purchase.

S. Stroock & Co. report earnings for nine months ended Sept. 30 of $174,033 against $152,312 the year previous.

Albert Banet, 127 East Duncannon St., Philadelphia, Pa., and associates, have established the Keystone Wool Pullers, with headquarters at 4016 Orchard St., that city.

Janney Woolen Mills have been established at 3170 Janney St., Philadelphia, Pa., under the management of Meyer Eisenbrock, of 1322 West Girard Ave.

LaFrance Industries, Philadelphia, and Pendleton Mfg. Co., LaFrance, S. C., have been put in hands of Harris Warthman as trustee, in 77B reorganization proceedings.

Centredale Worsted Co., North Providence, R. I., has been sold for $17,000 to Olneyville Wool Combing Co.

Argonne Worsted Co., Woonsocket, R. I., has been organized as a branch of the former Lafayette Worsted Co. to do French system combing, to dye wool tops and to spin yarn.

TEXTILE WORLD'S

Rayon & Silk Digest

HERE are some more entries as suggestions for a new name for staple fiber:

Norman S. Buchan, chemist with Newmarket Mfg. Co., Lowell, Mass., offers RAYCUT.

F. Laborde, chief of the Statistical Department of the Comité Central de la Laine, Colombes, France, is thinking along similar lines. He suggests that filament and staple rayon be called, respectively, FILRAYON and CUTRAYON. As an alternative, if it should prove too difficult to change the name of rayon proper, he suggests that it could remain unchanged, and the staple be called CUTRAYON. As still another suggestion he proposes the word RAY which is obtained by *cutting* the word rayon. (Get it?) However, he feels that his first suggestion is preferable.

S. H. Sherman, superintendent of Trenton Cotton Mills, Gastonia, N. C., gives us STARAY—manufactured obviously from staple and rayon. He suggests further that this name would lend itself to advertising by using a star with rays of light emanating from it. "This could also be used as a trademark," he writes.

Ernest Barber, textile expert and consultant, suggests CELLSPUN or CELFISPUN.

L. S. Lee, vice-president of Bruck Silk Mills, Ltd., Cowansville, Que., sends his suggestions in in bunches. Here they are: CUTRON, HIRSON, SHAGRON, SHAGRAY, WOLAINE, MOLRAY, MOLLON, RAYMOL, RAYHAIR, RAYBRON, FIBRAY, RAYTEX, RAYFLOCK, FLOCCO, FLOCKRAY, FLOCKON, CELFLOCK.

G. H. Palmer, East Orange, N. J., writes that after considering FILACEDE, FILACET, FIBRILON, FIBRONET and SEVRON as possible names, he came to the conclusion that RAYONET would be the most appropriate.

Another modest chap—who asks to be identified merely as "middle of the third row"—suggests STAPLON.

The name-creators are just beginning to get warmed up. Polls are still open.—*Editor.*

Rayon Yarn Stock Decline Continues

After its various price gymnastics, the rayon yarn market got down to business again last month, and buying continued very active. The rise in prices effected by cancellation of quantity discounts which cancellation will be generally observed by Dec. 31, served to encourage rather than discourage placement of orders by mills. On the viscose side, stocks now are below ½d of a month, and these stocks are made up mainly of unseasonable numbers. The chief producers are totally out of supplies on popular numbers; it is estimated that December demand will exceed available yarn by some millions of pounds.

The acetate price cut on finer deniers stimulated orders, but, as activity there has been only moderate in recent months, producers still have some stock on hand. The acute competitive situation which has developed between acetate and viscose as result of the cut, is a matter of immediate concern to the viscose division.

Industrial Rayon Corp., as of Jan. 1, announced a price rise on oiled underwear knitting cones and circular knit fabrics.

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F. T. C. Hearings End

After more than 70 days of hearings extending through nearly three years, the Federal Trade Commission's inquiry into alleged monopolistic practices by viscose rayon producers, were formally closed at Washington, Oct. 20. The case was based on a complaint filed Feb. 1, 1934, charging that the producers had violated the Clayton Act. The Commission devoted the final day to hearing motions by the counsel for the respondents, most of which were denied by Trial Examiner John W. Addison. It is not expected that the Commission's decision will be made known until early in 1937. The rules of the body allow the trial examiner 15 days to prepare his report, following which the commission counsel has 20 days and finally another 20 days is allowed the counsel for the respondents. The case then goes to the commission for final decision.

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Raw Silk on the Rise

Steady buying on the part of both weavers and hosiery knitters strengthened raw silk tone through October, and prices moved upward. The Commodity Exchange, New York, quoted crack double extra 13-15 white 78% at $1.70½ to $1.73 on Oct. 1, and on Oct. 23 this number had risen to $1.78½. Concluding days of the month brought further advances, and importers expected the market to hold its gains at least till mid-November.

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Velvet Prices Break

Popular-priced transparent velvets were the only backslider as regards prices during the month. Quotations were reduced 10 to 15c. on most numbers, bringing the standard $1.15 colored velvets down to $1.00 and the $1.05 blacks down to 95c. The weakness was ascribed to competitive conditions mainly. The reduction came as a surprise to the market generally, as velvets continue a highlight fashion fabric of the year.

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Rayon Fabrics Data

Deliveries of rayon broad woven fabrics held up satisfactorily through September, a seasonal drop in dress goods lines being offset by a further rise in call for staples, according to figures announced by the National Rayon Weavers Association. Figures follow:

1934 = 100	*August* 1936	*September* 1936
Taffetas, Twills, Linings and Other Staples	262	274
Dress Goods, Novelties, and Other Fancies	125	111
Total	173	167

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Current Rayon Data

Key rayon prices and statistics follow:

Prices	Nov. 2 1936	Oct. 1 1936	Nov. 1 1935	Nov. 1 1934
Viscose process				
75 denier (18-30 fils.)	$0.90	$0.90	$0.87	$0.90
100 denier (40 fils.)	.79	.79	.76	.75
150 denier (40 fils.)	.60	.60	.57	.55
Acetate process				
150 denier	.60	.60	.60	.70
Cupra. process				
150 denier (112 fils.)	.65	.65	.62	.70
Rayon staple			Not	Not
1½, 3 & 5½ denier	.28	.28	quoted	quoted

Statistics**	Indices of Deliveries* Year 1936	Year 1935
Month		
October	504	494
September	537	583
August	633	550

*Rayon Organon.
** Exclusive of Acetate. Daily average 1923-25 = 100.

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Current Silk Data

Key silk prices and statistics follow:

Prices	Nov. 2 1936	Oct. 1 1936	Nov. 1 1935	Nov. 1 1934
Crack XX 13/15 white 78%	$1.82	$1.71½	$2.14½	$1.21
Tram, 5thd Japan 85%	2.53	2.40	2.95	2.20
Tram Crack XX 78%	2.38	2.29	2.80	1.95
60s-2, spun silk	2.95	2.95	2.95	2.95

Statistics	Imports	Approx. Deliveries	Stocks at Warehouses
Aug. 1936	41,702	42,016	29,825
Sept. 1936	45,437	45,709	29,533
Oct. 1936	43,840	43,093	30,300

Reutlinger Finds Flat Quill Successful Abroad

J. J. Reutlinger, of Hatch & Reutlinger, textile consultants, New York, addressed the American Association of Textile Technologists, at the Hotel Wolcott, New York, Oct. 7, on observations made during a European tour from which he had just returned. The flat quill is standard on all new Swiss looms, he said, and dobbies are placed low down on the sides to improve illumination, reduce vibration, and eliminate some soiling of fabric. He also saw the electrical jacquard applied successfully to weaving and inspected quillers that remove initial yarn twist. He mentioned a warp twising-in machine which runs without attention and has been operating five years without a repair, and he declared that he found harness and reed entering machines in common use in Europe.

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Celanese at Fall River?

Reports current in the rayon industry for some weeks that the Celanese Corp. of America was considering plans to make rayon by the viscose process found partial confirmation Nov. 5, when it became known that the company was progressing with negotiations for acquisition of the American Printing Co. and the American Linen Co. plants at Fall River, Mass. Reports credit the company with planning extensive expansion of its rayon manufacturing and weaving operations. Officers of the Celanese Corp. in New York said that no formal agreement had been concluded.

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Boston Store Wins Silk Guild Award

First prize in the third annual window display contest sponsored by the International Silk Guild in connection with The Silk Parade went to The Gilchrist Co., Boston, the Guild announced Oct. 26. The window was arranged by Frank Early, display manager.

The awards were made on the following basis of percentages: 40% for "selling power" for silk; 30% on the artistic quality; and 30% on originality.

The winning window featured the classic influence in today's silks, showing a row of mannequins wearing rich silks draped in the classic manner, with gold laurel wreaths in their hair, and rhinestone belts.

Silk window-display of Gilchrist's, Boston, which received first prize.

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Industry Briefs

Rose Analyzes Staple Outlook—In an excellent study of the present and future prospects for stable fiber, H. W. Rose, assistant general manager, The Viscose Co., told a large textile audience in New York, last month that 1937 may see a 400% increase in staple fiber production in this country. He emphasized the need for closely studying the problems of spun rayon fabric manufacture and finishing, adding that his company discouraged use of staple by mills unless such firms indicate a desire to give careful attention to the technical problems involved in its use.

Farr Alpaca Sells Linings Direct—The Farr Alpaca Co., effective Oct. 22, took over the selling of its lining fabrics, including its important rayon lining group. The company now carries rayon lining stocks in New York to facilitate deliveries.

Gerli Sees Silk Reviving—Addressing the Silk Golf League at its fall tournament at Great Neck, L. I., last month, Paolino Gerli, president of the League, forecast a significant revival of interest in silk during the next twelve months and urged the trade to give strong support to this trend.

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Rayon & Silk Mill News

Celanese Corp. of America, Inc., Amcelle, near Cumberland, Md., has awarded contract to Lehigh Structural Steel Co., Allentown, Pa., for structural steel framing for new addition to mill, on which work will begin soon.

Albert J. Barston, who operates a rayon weaving mill at Midland Park, N. J., has installed 104 looms in the Wade Loft Building at Charlotte, N. C., and is operating a unit of the company there.

Pinehurst Silk Mill, Hemp, N. C., has under construction a new throwing room, measuring 210x165 ft., which will adjoin the preparation plant and office.

North Carolina Fabrics Corp., Yodkin, N. C., has let contract to Potter & Shackelford for a $45,000 two-story addition.

Industrial Rayon Corp., Cleveland, Ohio, has engaged Wilbur Watson & Associates, Inc., 4614 Prospect Ave., Cleveland, architects and engineers, to prepare plans for new rayon yarn mill on 400-acre tract of land in Painesville Township, near Painesville, Ohio, fronting on Lake Erie. Bids will be asked soon on general contract. Main unit will be one-story and basement, totaling over 300,000 sq. ft., floor space, with several smaller adjoining structures.

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Rayon and Silk Financial

Edward Bloom Silk & Rayon Mills, Putnam, Conn., are offering the Edward Bloom Co. machinery and equipment for sale. This includes throwing machinery, warpers, looms, and finishing machinery, together with accessories and supplies. This material was operated up to recently in the Putnam and New London plants of the Bloom Co.

Celanese Corp. of America on Oct 2 placed on the market a new issue of 50,000 shares of 7% cumulative series prior preferred. The $5,000,000 to be thus raised, will be used, etc. to increase and improve plant facilities.

Century Ribbon Mills, Inc., and subsidiaries reported a net profit of $109,251 for the first nine months of 1936, against $69,357 for the same period in 1935.

Collins & Aikman Corp. and subsidiaries reported a net profit of $2,418,223 for the six months ended Aug. 29, 1936, against $1,755,739 for the half year ended Aug. 31, 1935.

Huguet Silk Corp., New York, N. Y., has been chartered under Delaware laws with capital of $600,000 by J. P. Huguet, president and manager of the Canisteo Silk Co., Canisteo, N. Y., and associates, to manufacture and deal in broad silks.

Rayon Industries Corp., New York, together with seven subsidiaries, was ordered liquidated last month by Judge John P. Nields, of the U. S. District Court, Wilmington, Del. The firm is incorporated in that State.

Cedar Crest Silk Mills, Allentown, Pa., have resumed operations under direction of Milo D. Clader, who has resigned as general manager of the Majestic Silk Mills to become vice-president and general manager of Cedar Crest. He is associated with Louis Subin and Samuel Smith, who are also operating as the S.M.S. Silk Co., located in Allentown for the last 20 years.

Scranton (Pa.) Weaving Corp. mill, closed dwn several months ago, has been leased by A. J. Vander Voort, head of Northern Star Silk Co., Hancock, N. Y., and will be reopened at early date. Camiel Vander Voort, son of Mr. Vander Voort, will be manager at the mill.

Haskell Silk Mill, Westbrook, Me., is now operating 50 looms on a high grade silk, according to Ralph W. Haskell, South Portland, mill manager and treasurer.

Baer Co., operating silk mills in Lehighton and Berwick, Pa., has acquired the silk mill of the Berizzi Bros. Co. Inc., of New York, in Turbotville, Pa., idle since April 1935. New machinery and equipment will be installed and operations resumed in the near future.

TEXTILE WORLD'S

Knit Goods Digest

THE program of work developed at the first fall meeting of the executive committee of the Underwear Institute was a particularly broad and constructive one, embracing activities touching on such important items as the Robinson-Patman Act, the Walsh-Healey Act, trade practice rules, price protection clause, etc.

We regard as especially timely and vital the plan to develop general costing procedure on quantity discounts, advertising allowances, and other questions involved in the Robinson-Patman Act. The individual manufacturer, no matter how good his intention or how sound his cost procedure, would be placed in a difficult position and at a tremendous expense if called upon to defend his actions in connection with this act. But by this industry-wide effort, it will be possible to furnish each mill with a reliable basis for its cost policies. Obviously, the fact that the program agreed upon represented the best thought of the industry would help immeasurably to protect manufacturers.

An incidental good out of all this will be a re-creation of interest in cost principles and methods—at least for those associations like the Underwear Institute which are aggressive enough to take advantage of this opportunity.—*Editor.*

Design to Identify Standard Hosiery

Plans for identification of hosiery made in conformity with the new standards of construction and inspection for women's full-fashioned, were disclosed by Earl Constantine, managing director of the National Association of Hosiery Manufacturers in an address Oct. 30, before the Consumer Institute, Cincinnati, O. In the absence of Mr. Constantine the address was read by E. M. Schenke, research associate of the Association. He stated that a series of designs or transfers, controlled by patent, will be issued by the Association. The designs which will not be used on perfect hosiery, will indicate whether the merchandise is Standard A, B, or Substandard, in the "second," "irregular" or "third" classes, and will carry the four initials of the association, NAHM. Mr. Constantine added that the Association has plans in the making to acquaint the consumer with the nature of the standards and their significance.

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Hosiery Sales Up 8.6%

Continuing the expansion which began in summer, hosiery shipments in September, 1936 were 8.6% over August and 12.0% over September, 1935, it is reported by the National Association of Hosiery Manufacturers. For the first nine months of 1936, shipments of all types totaled 88,565,436 doz. prs., a gain of 10.4% over the same period last year. In these three-quarters all branches except woolen goods, were above 1935. Ribbed goods were highest with 23.3% increase, anklets second with 19.4% and women's seamless, excluding wool, third with 17.5% increase. Women's full-fashioned rose 5.8%.

Institute Drafts Important Policies

Important decisions were reached on various major problems now before the underwear industry at the fall meeting of the executive committee of the Underwear Institute held last month in New York. The meeting was probably the most significant since the Institute's annual convention in spring. Its findings are presented in condensed form as follows:

On the Robinson-Patman Act—The committee decided that proper application of costs and proper costs methods were the crux of this legislation, and in line with that decision, Earle E. West, cost director of the Institute was authorized to make a careful analysis of distribution costs and submit recommendations for mills.

On Walsh-Healey Act—The Institute was authorized to collect data on prevailing wage rates and be prepared to represent the industry at hearings which may be called under this Act.

On Trade Practices—The trade rules were adopted and will be presented to the Federal Trade Commission which body probably will present the rules to the trade for action at an open trade conference.

The rules provide substantially that (a) the word "shrunk" or any synonym shall not be used in describing knitted underwear unless the merchandise is treated to permit no more than 3% shrinkage; (b) when material other than textile fiber is contained in fabrics the percentage of such non-textile material shall be indicated, provided such percentage exceeds 3% of the accepted textile content, method of test to be that of the National Bureau of Standards; (c) no garment shall be marked "combed" unless the cotton content is composed entirely of combed yarn or unless the amount of combed yarn by weight is stated.

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Underwear Prices Rise

Steady buying of both winter and spring lines featured the knitted underwear market during the month. In mid-October several mills announced moderate price advances, and indications pointed to continued firmness, if not further advances this month. The advances so far are mostly on Spring lines, all of which opened strong. While volume has been steady for several months, it is felt that the profit margin has not been high enough to meet increased production costs, both with respect to the primary market advances and to the security law tax which brings an added burden at the end of 1936.

Underwear Survey Completed— A comprehensive survey of the knitted underwear industry and related divisions has just been completed by the Underwear Institute, it was made known Nov. 6. The survey was made by Francis E. Simmons, Institute director of statistics, and will be published this month in book form with a foreword by Roy E. Cheney, managing director of the Institute.

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Committee Studies Hosiery Data

With the first phase of the hosiery industry survey, covering assembly of vital data, now completed, the National Association of Hosiery Manufacturers this month was preparing to enter the second phase which covers the correlation and interpretation of the data and formulation of recommendations for the industry.

Earl Constantine, managing director, took up the matter immediately on his return from Europe last month, and was scheduled to have various conferences with the survey committee during November.

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1937 Swimsuits Get A Fine Send-Off

The 1937 swimsuit season got off to an auspicious start last month, interest centering on two developments—First, completion of preliminary plans for the second annual "Swim for Health Week," June 20-26, 1937; and second, the opening of the new season's lines. The national drive in June will be directed again by Martin Stern, and plans call for a wider range of effort. It was stated that the 1936 campaign had greatly stimulated demand for bathing-suits. Buyers showed active interest in the new swimsuit lines when these opened; the merchandise accented various new style trends.

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Hosiery Import Inquiry Ordered

The United States Tariff Commission announced Oct. 15 that, preliminary inquiry having shown the cotton hosiery import situation to warrant further study, an official investigation of that situation had been ordered. The Commission's action was welcomed as a victory for the National Association of Hosiery Manufacturers which body last summer filed a brief requesting such an investigation. The preliminary study of the cotton hosiery import problem brought together considerable data and information which material, it is

understood will supply groundwork for the broader survey now to be undertaken.

The Hosiery Association's organ, Special News Letter, stated that, "when the Commission has made sufficient progress in its investigation, a public hearing will be called, probably at its offices in Washington, D. C." Meanwhile, the hosiery association reports a further drop in hosiery imports from Japan, the August total being 151,666 dozens against 232,667 dozens for July.

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Berkshire Plans Albany, Ga., Unit

News of the establishment of a full-fashioned hosiery company to be capitalized at $500,000, at Albany, Ga., a subsidiary of Berkshire Knitting Mills, Reading, Pa., became public Nov. 4, and was interpreted in the market as confirming Berkshire's threat to "find another location," due to strike troubles at Reading. The new firm is to be known as Albany Mfg. Co., and according to Chamber of Commerce officials there, it will employ 200 to 250 operators. The mill will contain 100 machines which will be moved from Reading where the firm has 1,077 machines. It is understood that a second unit will be built as soon as the first unit begins production which will be within four months.

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Labor Pact Ends

While the national wage agreement between the Full-Fashioned Hosiery Manufacturers of America and the American Federation of Hosiery Workers terminated Nov. 2, leaving manufacturers free-handed as regards hours and wages, there was little evidence of any immediate backsliding. Observers of the post-agreement situation in Pennsylvania leaned to the belief that the strong anti-wage-cut position taken by the Philadelphia local of the union would discourage any tendency to veer away from the code levels.

Dr. Taylor Resigns—Termination of the agreement followed a rapid-fire series of developments, chief among which was the resignation of Dr. George W. Taylor of the University of Pennsylvania, as impartial chairman, after some years of distinguished service in that post.

A new Holeproof product—half hose and garter in one; elastic band is sewed to each sock. Retail price 55c.

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Knitting Mill News

Holeproof Hosiery Co. is erecting a $50,000 distributing depot at Marietta, Ga., adjacent to the Champion Knitting Mills, its subsidiary. A two-story brick and steel building, having 26,000 sq. ft. of floor space, is being erected. This will be the distribution point for all Holeproof men's hosiery as all the firm's men's hose is now made there. An experimental and research department will be housed in the new structure. The Marietta subsidiary employs 725 workers.

Corinth (Miss.) **Hosiery Mills, Inc.,** will install 20 additional machines and increase its production to 3,400 pairs of silk hose per week.

Standard Hosiery Mills, Inc., Alamance, N. C., has purchased six additional Reading knitting machines, at a cost of more than $60,000. These machines are scheduled to be put into operation in December.

Robbins Knitting Co., High Point, N. C., will occupy a three-structure brick building at Spruce Pine, N. C., early in the year, the work on the buildings having already gotten well under way.

Marion (N. C.) **Knitting Mills, Inc.,** have begun erection of new brick addition, 20x40 ft., and will equip for expansion.

McPar Hosiery Mill, Marion, N. C., is building an addition 26x54 ft., to provide additional space for grading, packing and storing, to speed up delivery. C. R. McCall is president.

Albert Green, formerly half owner of Rosal Hosiery Mills, Milroy, Pa., is arranging to open a similar mill in Belleville, Pa. It will operate 24 full fashioned machines.

Dyersburg (Tenn.) **Cotton Products, Inc.,** has completed $65,000 installation of new equipment, including facilities for long-draft spinning, modern-type knitting, stock-dyeing equipment for preparation of cotton for manufacture of colored yarns.

Logan (Utah) **Garment Co.** is establishing a knitting mill in Lethbridge, Alberta, Can., for the manufacture of knitted sports suits and dresses.

Wallner Silk Hosiery Mills, Inc., Pulaski, Va., recently organized with capital of $150,000 by Thomas J. Wallner, head of Virginia Maid Hosiery Mills, Inc., Pulaski, and associates, have plans nearing completion for new one-story mill on First St., South, estimated to cost over $75,000 with equipment. Part of the machinery to be installed is being secured from an inactive mill at Philadelphia, Pa.

Virginia Underwear Corp., Martinsville, Va., has approved plans for four-story addition to knitting mill and will equip to double present capacity. Cost over $50,000, with equipment.

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Knitting Financial News

Glastonbury Knitting Mills, Inc., Addison, Conn., have been organized with capital of $50,000 by Daniel C. Flynn, 750 Main St., Hartford, Conn., and associates, representing new interests which recently acquired the plant and property of the Glastonbury Knitting Co., in 77B reorganization, for about $135,000. The same interests have formed the Glastonbury Realty Co., and the Knitting Realty Co., each with capital of $50,000, to take over and hold the mill property. Officials of A. Schaap & Sons, 394 Broadway, New York, N. Y., are interested in the new company.

Cordele (Ga.) **Development Co.,** capitalized at $125,000, was recently formed and secured the location of hosiery mill with capital of $500,000. The city commission has just approved application for building first unit of plant. Construction begins within few weeks.

Newport (N. H.) **Sportswear Co.** plant was badly damaged by fire on Oct. 8. The factory had only recently opened and an addition was being planned. Loss amounted to several thousands of dollars.

Silver Lake Knitting Mills, Inc., Clementon, N. J., have been formed with capital of $125,000, to operate a local mill. New company is represented by Frank A. Leh, Clementon.

Apex Knitted Fabrics, Inc., 707 Broadway, New York, is installing 100 knitting machines for the manufacture of knitted fabric to be sold direct to the trade. Jack Turner, formerly superintendent of the Belle Knitting Co., Sayre, Pa., is president of this newly organized company. The product includes knit cotton for underwear, and tuck stitch fabrics for polo shirts, pajamas, underwear, etc.

Julius Kayser & Co., and affiliated companies, except Julius Kayser (Aust.) Pty., Ltd., reports net income of $225,596 for the quarter ended Sept. 30, against $216,980 for the same period in 1935.

Van Raalte Co. reports net earnings of $163,186 for the third quarter of 1936 against $152,694 for the same period last year. The company shows a net of $583,600 for the first nine months against $479,490 for the same period last year.

Myro Knitting Mills, Inc., Brooklyn, N. Y., have been organized with capital of $20,000, to operate a local mill. New company is represented by David Deutsch, 353 Stone Ave., Brooklyn.

Jantzen Knitting Mills and affiliated companies report net profit of $369,159 for the fiscal year ended Aug. 31, 1936, as against $157,089 for the preceding year. Consolidated net sales totalled $3,062,810 against $2,563,432 in the previous year.

Moffitt Underwear Co., High Point, N. C., including brick mill building, 97x192 ft., cutting room 30x192 ft., shipping room 56x98 ft. and office building 20x41 ft. was sold at auction Sept. 29. Machinery was sold separately.

Whenball Hosiery Mill, Inc., Newton, N. C., recently formed with capital of $50,000, has taken over former local plant of Carolina Glove Co., and will remodel and equip for new hosiery finishing mill. New company is headed by E. G. Ballinger, Jr., Hickory, N. C., and J. L. Wilson, Raeford, N. C.

Clark Knitting Mills, Rutherfordton, N. C., has been incorporated by Watson Clark, George Clark and Julius Carpenter for $5,000.

Sumners Hosiery Mills, Inc., Salisbury, N. C., capitalized at $100,000, has been organized to manufacture hosiery and other knit goods. C. H. Sumners, Mrs. C. H. Sumners and H. L. Arey are the incorporators.

Thomas W. Buck Hosiery Co., Philadelphia, Pa., has leased the first floor of its mill at Jasper and York Sts., to Charles A. Allen Co., Inc., Philadelphia, which it will use for another line of production.

C. F. Rogers and others will soon open a hosiery plant in the Highland Park suburb of Kingsport, Tenn.

Racine (Wis.) **Feet Knitting Co.,** Beloit, Wis., has been bought by George R. Thompson, of La Crosse, Wis., who recently purchased the La Crosse Hosiery Co. of which he has been general manager for several years. A new corporation, the Beloit Hosiery Co. is to operate the Beloit mill, employing 40 persons.

Circle-Bar Knitting Co. Ltd., with plants in Kincardine and Owen Sound, Ont., has purchased the full-fashioned hosiery mills of the L. O. Hudson Co. Ltd., St. Catharines, Ont. Knitting equipment is being transferred to plant at Owen Sound and finishing machinery to plant at Kincardine.

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TEXTILE WORLD'S

Processing Digest

A well-known theatrical producer devoted the greater part of his life, with financial profit to himself, to the glorification of the American girl. Many of us in this industry, with less financial profit to ourselves, have devoted the best part of our lives to the glorification of textiles. The less Mr. Ziegfeld used textiles, the greater was the glorification and the greater were his profits. The more we are able to glorify textiles, the greater will be their use and, we hope, the greater our profits.

In the special processing section of this issue, which starts on page 89, are discussed some of the more important recent developments in the field of bleaching, dyeing, printing, and finishing. We commend the reading of that section with an eye to ideas for greater textile glorification and greater textile profits.—*Editor.*

U. P. D. Reopens

Prospects for resumption of normal activity in the finishing industry of the Paterson, N. J., area, strengthened appreciably during the month, following the news that the United Piece Dye Works, Lodi, N. J., one of the industry's major companies, employing over 4,000 workers, had effected a settlement of its controversy with the union. It was announced Oct. 15, that a two-year contract had been signed between UPD and the Federation of Silk Dyers, Printers, Finishers, & Bleachers of America, and that immediate steps would be taken to reopen the plants which have been completely closed down since late in August. During following weeks the company made rapid progress toward normal operation.

It is understood that the new contract provides for minimum wages for men of 60c. hourly and for women of 48c. hourly, the same as heretofore. The contract permits installation of speedier equipment, but stipulates that "work loads" of employees shall not be increased. While the settlement is understood to have set at rest rumors of UPD leaving the Paterson district, the company is proceeding with plans to equip the newly leased plant space at Chester, Pa., with machinery for experimentation on acetates and rayons.

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Oxidation of Wool

Methods for determining the oxidation of wool in bleaching and chlorination investigated at the National Bureau of Standards, by Milton Harris and Arthur Smith, research associates of the American Association of Textile Chemists & Colorists, are discussed in the October issue of the *Journal of Research.* The report points out that oxidizing agents attack the disulphide groups of the cystine in wool and increase the solubility of the product in alkaline solutions. Determination of the alkali-solubility may be used as a measure of the extent to which the wool is oxidized. This method gives a measure of the extent to which the wool is degraded by photochemical reactions. Data are also given which indicate a relationship between the chemical and the physical degradation of wool fibers.

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Discharge Printing Compound

Development of a latex compound particularly suitable for use in discharge printing is announced by Revertex Corp. of America, 80 Broad St., New York. This compound, known as K-57 C, is sold ready to use and is said to have very good keeping qualities. Advantages of latex as an assistant in discharge printing cited by the Revertex Corp. are as follows: The discharged cloth has a soft feel and a good white color; the dry latex paste remaining on the cloth has no tendency to flake off; and a considerable reduction in the cost of the discharge printing paste is effected.

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Effect of Heat and Pressure on Cotton Fabrics

Results of an investigation to determine the effect of heat and pressure on cotton fabrics are reported in Technical Bulletin 517, of the U. S. Department of Agriculture. This work shows that at a pressure of 1.3 lb. scorching takes place in 2.4 sec. at a temperature of 254.5° C. and in 30 sec. at a temperature of 141.5° C.; at a pressure of 4 lb. scorching occurs in 2.4 sec. at 198° C. and in 30 sec. at 132° C. The investigation was carried out by K. Melvina Downey and Ruth E. Elmquist, of the Division of Textiles & Clothing, Bureau of Home Economics.

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New Dyes

General Dyestuff Corp. announces the following new products: Para Yellow RL, a homogeneous direct dye yielding pure yellow shades of good average fastness when coupled with Nitrazol CF or diazotized with paranitraniline; Nerol GGL, a homogeneous acid black producing deep, black shades of a greenish cast; Indanthren Grey MG, a vat dye in fine powder form for producing dyed shades of excellent fastness to light; and Palatine Fast Yellow 6GEN, a homogeneous acid dye similar in shade and fastness to the 5GN and 6GN brands; but having a better leveling power.

National Aniline & Chemical Co., Inc., announces the following new product: Erie Black NRG, a direct black similar in properties to Erie Black NR and intermediate in shade to it and Erie Black NCW.

Sandoz Chemical Works, Inc., an-

Evening wrap of quilted silver Revolite which won first prize in the style group of the modern plastics competition inaugurated this year by the magazine Modern Plastics. Revolite, which is a waterproof material produced by coating fabrics with Bakelite resin, has previously been employed in raincoats, shower bath curtains, etc.; but this marks its introduction to the field of evening apparel. Helen Runyon, of the Revolite Corp., New Brunswick, N.J. styled the wrap.

nounces the following new products: Artisil Light Blue Bl, an acetate dye for producing light self or combination shades; Artisil Direct Orange 4RP, an acetate dye yielding a reddish orange shade which is dischargeable to a pure white; Omega Chrome Brown PG, a chrome dye yielding shades of very good general fastness; Omega Chrome Orange ML, a chrome color of excellent fastness to light and very good fastness to fulling; Brilliant Alizarine Milling Blue G, a wool dye combining very good fastness to light with good fastness to fulling; A20 Rubinole 3GP, a level-dyeing acid color of excellent fastness to light; Acid Light Scarlet GL, an acid dye yielding bright scarlet shades of very good general fastness; and Visco Copper Blue EG, a level-dyeing direct dye for rayon, yielding uniform shades on cuprammonium and mercerized cotton.

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Association Notes

New York Section of the American Association of Textile Chemists & Colorists held its first meeting of the 1936-1937 season Oct. 23, at the Swiss Chalet, Rochelle Park, N. J. The chief speakers were E. H. Benzing, American Bemberg Corp., who spoke on "Problems in Dyeing and Finishing of Bemberg Fabrics"; and Fred A. Mennerich, U. S. Testing Co., who spoke on "Microscopical Examination of Rayon Filaments."

Piedmont Section held its annual meeting, Nov. 7, at the Charlotte Hotel, Charlotte, N. C. The visiting members attended a football game in the afternoon and enjoyed golf at the Charlotte Country Club. Speakers at the dinner meeting included Clyde Hoey, Democratic nominee for Governor of North Carolina; and P. J. Wood, past president of the National Association. Chester L. Eddy, of Renfrew Bleachery, Travelers Rest, S. C., general chairman of the Piedmont Section, presided at the meeting.

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Industry Briefs

Raise Wages—Rockhill (S. C.) Printing & Finishing Co. effective Oct. 12, raised wages of 1,400 of its total of 1,600 workers 5%. The raise affected all those on a per hour basis.

A Gift—United Piece Dye Works last month made a gift to the Metropolitan Museum of Art, New York, of the Besselievre fabric collection. The collection comprises thousands of valuable specimens of 16th, 17th and 18th centuries. The collection will be available to textile designers for study.

Screen Printers Advance Prices—Increases of 1 to 5c. per yd. in screen-printing prices were announced last month by the members of the Screen Printers' Guild. The raise is attributed to the higher labor costs resulting from the recent 15 to 25% raise in wages. The new wage pact was signed in September and became effective Oct. 1.

N. J. Dyers Active—Business was generally active last month among the silk and rayon dyers in the New Jersey district. A feature of the season is the increased attention devoted to study of finishing of spun rayon fabrics.

Converters New Code—With the aim of improving price tone and ending the present profitless-prosperity situation, the Textile Converters Association of New York, last month, drew up a list of trade practices to be submitted to the members for approval. Edmund Wright, executive secretary, said the code would not become effective unless 60% of the converters signed up. The provisions include Saturday closings, abolition of secret rebates, books of signatories shall be open for inspection, requirement that claims for defects or returns must be presented within 10 days of delivery.

Expand Sanforizing Promotion—Byron G. Moon announced in New York last month that plans were about completed for increased promotional activity on behalf of Sanforized-shrunk merchandise.

"Sterilize" Surplus Finishing Machinery—With the aim of solving the over-capacity problem of the British finishing and printing industry, a committee has developed a two-point program, Lennox B. Lee told the general meeting of the Calico Printers' Assn. recently in Manchester, England. The plan provides for continued operation of all equipment for which there is demand, and "sterilization" but not destruction of equipment which is inactive. The latter was recommended to ease competitive problems and the issue has been laid before Parliament in the hope of procuring an enforcement act.

Gather Cotton Shrinkage Data—Preliminary to development of trade-practice rules on cotton textile shrinkage, the Federal Trade Commission, last month, began gathering data on this subject. Hearings on the subject are expected to begin at the end of November.

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Processing Plant News

Lanett (Ala.) Bleachery & Dye Works has bought the machine shop of Lanett mill and are erecting addition to increase plant's steam supply.

Summit (Miss.) Textile Co. has approved plans for one-story building to be equipped as a dye works. A new boiler plant will also be erected. Cost reported over $30,000, with equipment.

Kerr Bleaching & Finishing Works, Inc., Concord, N. C., have awarded contract to the J. J. McDevitt Co., Concord, for one-story addition, to be used for office and general operating service.

Granite Finishing Works, Haw River, N. C., has completed a $40,000 addition, which is being used for a storage department.

Greenville (R. I.) Finishing Co. has begun construction of new two-story addition to mill, for which general contract recently was let to H. M. Soule, 110 Brook St., Pawtucket, R. I. Cost close to $50,000, with equipment. C. R. Makepeace & Co., Providence, R. I., are architects and engineers.

Canadian Cottons Ltd., Montreal, Que., are preparing to install a "Sanforizing" plant. The license for doing this work has been obtained from the Cluett, Peabody & Co., Inc., Troy, N. Y. The machinery for the new plant has been ordered in England.

Cobourg (Ont.) Dyeing Co. has begun construction of one-story addition to dye and bleach works, 80x135 ft., estimated to cost close to $50,000, including equipment. Sheehy Construction Co., George St., Peterboro, Ont., is general contractor.

W. Robinson & Sons Converters, Woodbridge, Ont., have begun erection of one-story mill addition, 75x210 ft., estimated to cost over $65,000 with equipment.

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Processing Financial

Bristol Finishing Co., Inc., Fall River, Mass., has been organized with capital of $25,000, to operate a local dye and finishing mill. Jacob Diamond is president, and Abraham Abramson, 32 Kelly St., Taunton, Mass., treasurer and representative.

Avalon Textile Printers, Inc., Brooklyn, N. Y., have been organized to operate a textile print and finishing mill. New company is represented by Herman M. Goldberg, 44 Court St., Brooklyn, attorney.

Cretona Print & Dye Works, Clifton, N. J., has been leased by the RFC, which bid it in for $385,000 at a bankruptcy sale, to a group headed by Weber DeVore who will operate it as the Cliftonia Dyeing & Printing Corp. Mr. DeVore recently resigned as credit manager of United Piece Dye Works. With him are Messrs. Megroz, Lehne, Devigne and Brinkman.

Fiory Dye Works, Garfield, N. J., will be liquidated if recommendations made by creditors to the receiver are adopted.

Supreme Finishing Corp., Passaic, N. J., has been organized by Peter C. Van Loon, 35 Eighth St., Passaic, and associates, with capital of $100,000, to operate a local dye and finishing works. Company is represented by William H. Hordifer, Passaic attorney.

Passaic (N. J.) Print Works have been sold to the Liquidation Corp., acting as agent for the Consolidated Products Co., Inc., 15 Park Row, New York, N. Y., at a price estimated over $200,000. It is planned to dispose of the plant as a whole and negotiations are under way.

McLean Piece Dye Works, Inc., Paterson, N. J., with local mill on McLean Blvd., has taken out a charter under New York laws, with capital of 200 shares of stock, no par value, to operate in that state.

United States Novelty Printing Co., Inc., Paterson, N. J., recently organized with capital of 1000 shares of stock, no par value, plans operation of local mill for dyeing and printing of silk and rayon. New company is represented by Emanuel Shavick, 140 Market St., Paterson, attorney.

Scottish Dye Works, Ltd., Vancouver, B. C., is considering early financing through the sale of common stock totaling about $350,000, part of proceeds to be used for plant development.

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TEXTILE WORLD'S

Engineering Digest

ONE of the incidental jobs which a department-head in a textile mill—or in any other organization—must tackle is to keep the mill management "sold" on the accomplishments of his department. We are not thinking of this in connection with financial reward for the individual concerned, but rather the necessity of establishing the importance of a department in the scheme of things, if it is to be given full chance to grow and develop.

At the recent meeting of the Master Mechanics Division of the Southern Textile Association at Spartanburg, S. C., it was brought out that properly kept records can be used to show the management what is being done toward increasing the efficiency of the mechanical department. Comparison, with previous years, of amount of steam produced per pound of coal, number of shut-downs in various departments, yardage per kilowatt input, etc., etc., will help to correct the lack of appreciation which too many mills have for this misnamed "non-productive" department.—*Editor.*

Hard-Facing Machine Parts Increases Life

Hard-facing with wear-resistant non-ferous alloys is a process which recently has come into wide use in many industries and is beginning to assume considerable importance in the maintenance of textile machines. Three examples of hard-facing in the textile industry reported by Haynes Stellite Co. are as follows:

At one large mill, the ordinary cast-iron winder trumpets required filing and truing once a month, and, if this were not done, the grooves cut the yarn or thread. Furthermore, new trumpets had to be installed every six months. The mouths or triangular openings of a large number of these parts were hard faced—and nine months later showed no signs of wear. At the same time the trumpets were treated, a number of enameled-steel transfer guides, which formerly lasted but one week before being turned around, were also hard-faced. After nine month's service, these parts also showed no wear.

A knitting mill applied cobalt-chromium-tungsten alloy to the wearing surfaces of stitcher cams which cost $2.18 each and ordinarily lasted about one month. The worn cams were built up at a cost of 38c. each, and lasted six months. This cost included both labor and material.

Another large textile company hard-faced the cams and fallers used in wool-combing machines. These cams are subjected to severe wear as they come in contact with the fallers about 100 times a minute. Case-hardened, the average life had been no more than five weeks. However, after hard-facing them, there was no evidence of wear on either the cams or saddles at the end of a similar period of time.

Fig. 1.—No signs of wear after nine months' constant service can be noted on this hard-faced winder trumpet.

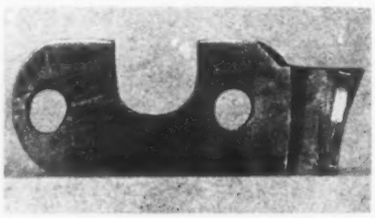

Fig. 2—Stitcher cams last six times as long with hard-facing

There are many other applications of hard-facing in the textile mill. For example, loom dagger-rods have to be pointed every two or three months, and the rods are usually run until cut in two by the threads. A few drops of the new alloy on the wearing points will make them last almost indefinitely. Tension brackets and guide knockers are other wearing points which require but a few drops of alloy for their protection.

Application of wear-resistant alloys is simple, as the material can be obtained in the form of an ordinary welding rod and applied by any good welding operator. The surface to be hard-faced is simply raised to a sweating heat and the protective alloy flowed on. The rough-welded surface is then ground to size and is ready for use. The non-ferrous alloys of cobalt, chromium and tungsten are especially adaptable for this process as they form a firm bond with the base metal. A little experience will help determine the correct thicknesses, the proper location, and other technical problems of application. Maintenance of wearing parts treated in this manner should become a very minor portion of overall expenses as the alloys can be applied over and over again when the part becomes eventually worn.

•

McKelvie Addresses Charlotte Engineers

The Charlotte, N. C., Engineers Club was recently addressed at luncheon by H. M. McKelvie, vice-president and general manager of Firestone Cotton Mills, Inc., Gastonia, N. C. He recounted the history of the plant and described the many improvements made since Firestone began operating it in 1935.

•

Acetylene Association Meets in St. Louis

The 37th annual convention of the International Acetylene Association is to be held Nov. 18 to 20 in St. Louis. Outstanding leaders in the welding industry are scheduled to appear on the program which is designed to interest everyone who uses welding or cutting apparatus. A welding and cutting forum will be held on one evening, and a large number of technical topics will be discussed at other times.

•

Power Show Next Month

The final touches are being made to the plans for the Twelfth National Exposition of Power & Mechanical Engineering scheduled to be held Nov. 30 to Dec. 5 in the Grand Central Palace, New York. Three floors will be occupied by exhibits and admission will be by invitation or registration only. Operating exhibits will be featured, and the equipment on display will range from power-producing equipment, factory machinery, and industrial equipment to materials of construction and plant accessories.

•

Proposal To Reduce Fire Hazards

The National Fire Protection Association at its annual meeting reported on a number of recommended practices and standards to prevent loss of life and properly by fire. Subjects of especial interest to the textile industry included reports on dust explosions, care of fire hose, fireproofing, extinguishers, flammable liquids, etc. Pamphlets can be secured from the offices of the National Fire Protection Association.

•

Ample Water Supply For Air-conditioning

The increasing number of air-conditioning installations over the country during the last few years need not cause city officials to worry about the adequacy of their water supply, declared E. V. Erickson, engineer of Carrier Corp., at a recent meeting of the New York Chapter of the American Society of Refrigerating Engineers. He described equipment developed by Carrier designed to eliminate 90 to 95% of the normal water requirements, and said that such equipment already in use is saving water at the rate of 1,800,000,000 gal. per year.

Watson Reelected Head of Safety Council

Dr. C. H. Watson, medical director of the American Telephone & Telegraph Co., New York, was reelected to the presidency of the National Safety Council at the Twenty-Fifth National Safety Congress held last month in Atlantic City. Dr. Watson has long been active in safety work, Red Cross affairs, and organizations dedicated to making the world a safer and better place in which to live.

•

New Research Building At Callaway Mills

Callaway Mills, LaGrange, Ga., has recently added another building in its series of construction and real estate developments. This addition, a new research building, modern in every detail, is located directly behind the vocational school, which, together with a thoroughly equipped laboratory, was completed last year. The research building is to be used primarily for general research work on all types of textiles.

Since the founding of the Callaway organization as Unity Cotton Mills in 1900, it has grown continuously. Today, the company communities in LaGrange, Manchester, Milstead, and Hogansville, Ga., include 18 churches, 4 schools, 29 stores, 5 Y.M.C.A. buildings, 4 recreation parks, 7 playgrounds, 4 baseball parks, 5 swimming pools, 3 greenhouses and 5 motion-picture theaters. The number of employees in the organization averages from 4,000 to 5,000 persons.

Entrance to new research building at La Grange, Ga., erected by Callaway Mills

•

Textile Standard Revision

For comment and criticism, which must be received by Nov. 27 to be considered, the Procurement Division of U.S. Treasury Dept. is circulating copies of an extensive revision proposed for "Federal Specification for Textiles; General Specifications, Test Methods" (FS. CCC-T-191).

•

Engineering Trade News

Pittsburg Plate Glass Co., Pittsburg, Pa. recently announced a cash dividend of $1.50 a share to be paid out of 1936 earnings. Along with this announcement to stockholders was sent a booklet devoted to the personnel of the company containing pictures and service records of many of the executives.

Sherwin-Williams Co., Cleveland, Ohio, announces three important promotions among the personnel of the company, effective Oct. 1. H. D. Whittlesey, first vice-president and director of sales distribution, was relieved of his duties as director of sales in order to devote his entire time to executive duties and to the further interests of allied connections. A. W. Steudel, vice-president, also became general manager. K. H. Wood was made director of sales and distribution for the entire company.

Linde Air Products Co., 205 East 42d St., New York, has opened a new district office at 2 Virginia St., Charleston, W. Va., with A. R. O'Neal as district manager. This brings the total sales offices to 31.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., announces the following changes in sales representation in the southwestern territory: H. S. Dershimer has been appointed district sales manager, Tulsa, Okla., with offices in the Philtower Bldg., and direct representation in Houston and Dallas, Tex. Dallas headquarters will be at 728 Wilson Bldg., with Reid R. Lumsden in charge. Houston headquarters will be at 1007 Electric Bldg., with O. E. Berg in charge.

Bristol Co., Waterbury, Conn., announces the addition of four graduate engineers to its field service organization. Their primary duties will be to periodically inspect and make minor repairs for customers who have subscribed to the Periodic Inspection Service furnished by the company. The engineers are as follows: E. H. Hart, graduate of Geneva College, Beaver Falls, Pa., with considerable industrial experience in the Pittsburg section, assigned to the Boston office; J. N. Swarr, graduate of Purdue University, with considerable miscellaneous manufacturing and plant experience, assigned to the New York office; K. J. Platt, B. S. and M. S. in chemical engineering from Queens University, Ontario, with several years engineering experience with Canadian Packers, assigned to the Philadelphia office; R. A. Barnes, graduate of Purdue University, with extra courses and experience in petroleum engineering, assigned to the St. Louis, Mo., office.

Westinghouse Electric & Mfg. Co. has appointed George H. Bucher executive vice-president. Mr. Bucher, for some time a vice-president of the company, is moving from New York to East Pittsburg, Pa.

Green Fuel Economizer Co., Inc., Beacon, N. Y., has added Leon H. A. Weaver to its sales and advertising department. He was formerly publicity manager for the Superheater Co., New York.

Wodack Electric Tool Corp., Chicago, has completed arrangements to manufacture its line of electric tools in England and distribute them through Great Britain and the Dominions. Climax Rock Drill & Engineering Works, Ltd., London, will make the tools from patterns identical with those used in Chicago and distribute them through its sales organization.

Sheffler-Gross Co., Inc., Drexel Bldg., Philadelphia, announces that Frank B. Conlon has joined the firm as sales engineer. He is a graduate of Ohio State University, class of 1929.

•

Engineering Mill News

Pond Lily Co., New Haven, Conn., is planning to erect a garage for its trucks and cars, one story high, 22x60 ft., of brick.

Cedartown (Ga.) **Textiles, Inc.,** recently completed a water system and filter plant. J. E. Sirrine & Co., Greenville, S. C., were engineers.

Dunson Mills, LaGrange, Ga., has repaired the interior of the mills and put on a modern new roof. The dwellings in the village have been repaired and repainted.

West Point (Ga.) **Mfg. Co.** is constructing an auditorium at their Langdale, Ala., plant, which will cost $40,000. It is scheduled to be completed by Jan. 1.

Willingham Cotton Mills, Macon, Ga., are constructing a building which will be used for a storage department.

West Point (Ga.) **Mfg. Co.** has announced plans to erect a brick laboratory building at its Shawmut, Ala., plant. R. Kenton Perry of Atlanta is the architect.

American Woolen Co. has sold 61 houses in its South Lawrence, Mass., model village to the Andover-Shawsheen Realty Co. for about $200,000.

Summit (Miss.) **Textile Co.** has under construction a new boiler plant and dyehouse, and will install a heating and sprinkler system.

Firestone Cotton Mills, Inc., Gastonia, N. C., has remodeled the old community house of the village, which was erected in 1918, and has converted it into one of the most modern community houses in Gastonia. Contract has been let to Mecklenburg Nurseries, near Charlotte, for work on shrubbery and grass in the village.

Proximity Mfg. Co., Greensboro, N. C., is planning extension in water supply system, including installation of pipe line from Richland Creek, pumping station and other facilities, to replace supply now being secured from the city and provide for increase.

Jackson Mills, Plant No. 3, High Shoals, N. C., are now occupying a new office building. A large dwelling was remodeled for this purpose.

Moore Cotton Mills Co., Lenoir, N. C., lost 17 houses from its village last month as a result of a fire. Damage estimated at $20,000.

Belton (S. C.) **Mills** is installing a modern high-pressure steam boiler in connection with its steam turbine plant. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Kendall Co. is having improved ventilation installed in the picker room of Wateree plant at Camden, S. C., by the Textile Shop of Spartanburg.

Norris Cotton Mills Co., Cateechee, S. C., which until recently was partly rope-driven from water wheels, has installed a rope-driven generator in place of the direct water-wheel drive, and has electrified its weave room. This puts the entire plant on electric power. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Alice Mfg. Co., Easley, S. C., has installed a sewer disposal plant. J. E. Sirrine & Co., Greenville, S. C., are consulant engineers.

Piedmont Plush Mills, Greenville, S. C., is installing stokers in the steam plant. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Watts Mills, Larens, S. C., is installing a modern steam boiler. J. E. Sirrine & Co., Greenville, S. C., are engineers.

Piedmont (S. C.) **Mfg. Co.,** has constructed a new school building in the village. J. E. Sirrine & Co., Greenville, S. C., handled the engineering work.

Jackson Mills, Wellford, S. C., have repaired a generator burned out by lightning. No. 2 plant was shut down three weeks during the work.

Perennial Dye & Print Works, Inc., West Warwick, R. I., has filed plans for a power plant, 46x88 ft., one story. Plans were drawn by William R. Walker & Son., Providence, and work is being done by the owners.

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FREE FOR THE ASKING—

READERS interested in the catalogs and other useful literature reviewed on this page may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York, N. Y.

V-Belt Drives

Rockwood Mfg. Co. Illustrated catalog containing description, specifications and engineering data related to single-groove V-Belt drives. A second catalog contains similar data for multiple-groove drives.

Rayon Pattern Machine

Wildman Mfg. Co. Folder containing swatch of figured rayon fabric produced on Wildman rayon pattern machine. Folder also includes brief description of machine.

Jack-Spooler Parts

Davis & Furber Machine Co. Catalog listing and describing parts of all Davis & Furber spoolers in use, as well as parts of bobbin stands and creels. One chapter devoted to simplification of spooler terms so as to reduce the possibility of errors in ordering.

Chain Drives

Morse Chain Co. Illustrated catalog containing description, specifications, engineering data, and prices related to Morse silent-chain drives and attachments.

Boiler-Water-Level Controls

McDonnell & Miller. Catalog containing detailed description, dimensions, engineering data, drawings, and photographs related to McDonnell boiler-water-level controls.

Chain Transmissions

Link-Belt Co. October issue of *Link-Belt News* carrying articles on applications of chain drives to (1) a bag-cutting machine in use at Schmutz Mfg. Co., Louisville, Ky., and (2) machinery in use at Real Silk Hosiery Mills, Inc., Indianapolis, Ind.

Air-Operated Controllers

Brown Instrument Co. Illustrated catalog containing description, specifications, and engineering data related to line of Brown air-operated controllers for temperature, pressure, flow, and liquid level. Also explains fundamentals of process control.

Copper and Brass

Copper & Brass Research Association, New York. *Copper & Brass Bulletin* containing article on the use of copper and its alloys in textile mills. Illustrations were furnished by TEXTILE WORLD.

Portable Cranes

Lewis-Shepard Co. Illustrated folder devoted to portable cranes, hand or electric powered with either revolving base, telescopic, or hinged frame.

Lift Trucks

Elwell-Parker Electric Co. Bulletin describing Type EQ low-lift platform trucks. These small trucks, with a lifting capacity of 3,000 lb., are standardized with other Elwell-Parker equipment so that principal units can be interchanged. Also, folder on 6,000-lb. high-lift truck.

Leather Packing

J. E. Rhoads & Sons. Folder showing how to order Rhoads tannate leather packings. Also contains price list.

Operation-Maintenance

Pacific Gas & Electric Co. Fall issue of *Timely Ideas* containing a large number of case studies on improvement of working conditions. A full-page photograph and brief description of the new windowless plant of Hudson Silk Hosiery Co., Charlotte, N. C., is included—based on a detailed article which appeared in the October issue of TEXTILE WORLD.

Instruments

Foxboro Co. Unique folder devoted to photographs and description of how Foxboro instruments were used in the construction of the 200-in. glass reflector for the Mt. Palomar Observatory.

Canvas Baskets

Meese, Inc. Folder describing and illustrating canvas baskets and trucks for mill use. Leaflet, "Textile Tips," illustrating canvas doffing truck, roving can, steaming basket, and other equipment.

Water Softeners

Hungerford & Terry, Inc., Circular K, describing and illustrating the Invers and Zeolite water softeners.

Pumps and Compressors

Worthington Pump & Machinery Corp. Two folders—one on electrically operated, automatic-priming centrifugal pumps; the other on Feather Valve air compressors.

Chemicals

Glyco Products Co., Inc. Revised edition of booklet, "Chemicals by Glyco," describing wetting agents, emulsifying agents, synthetic waxes, resins, and other chemical products.

Mothproofing

General Dyestuff Corp. Booklet containing testimonials by scientists and mill men on the efficacy and value of Eulan as mothproofing agent.

Warp Sizing

Charles B. Johnson. October issue of *Rayon Warp Sizing Specialist*, containing article on control of quetsch pressure.

Cotton Spinning

Platt Bros. & Co., Ltd. Booklets on flyer frames and graduated long-draft system of spinning. Both booklets are copiously illustrated and contain descriptive and engineering data.

Photomicrography

Bausch & Lomb Optical Co. Folder discussing and illustrating equipment used in making low-power photomicrographs with Micro-Tessar and Tessar IIb lenses.

Shipping

Railway Express Agency, Inc. Booklet illustrating "What Happens When You Ship a Package."

Arc Welding

Lincoln Electric Co. Booklet discussing and illustrating the Shield-Arc S.A.E. electric welder with dual continuous control and other improved features.

Air Conditioning

Carrier Corp. Illustrated 16-page bulletin describing air conditioning, refrigeration, and space-heating equipment; includes capacities, ratings, and diagrams of units and central plants.

Scales

Fairbanks, Morse & Co. Three bulletins. First bulletin describes and illustrates Fairbanks printomatic scales; the second, an all-metal portable scale with steel-clad platform; the third, a direct-reading cabinet scale.

Stainless Steel

Republic Steel Corp. Series of five booklets on Enduro Stainless Steel. The first booklet lists the properties of thirteen types of Enduro and the corrosion-resistance of the four leading types; the second gives detailed information on Enduro 18-8 and its several variations; the third is devoted to the straight chromium types of Enduro; the fourth, to the heat-resisting types; and the fifth, to Enduro 4 to 6% chromium steels.

Textile Chemicals

Onyx Oil & Chemical Co. Booklet describing complete line of Onyx chemicals used in throwing, bleaching, dyeing, printing, and finishing.

Micarta

Westinghouse Electric & Mfg. Co. Two folders—one, "Micarta in Textile Mills," illustrates various textile applications of Micarta; the other discusses the mechanical and electrical properties of Micarta and lists various standard forms in which this material is available.

Compressors and Pumps

Worthington Pump & Machinery Corp. Bulletins describing Type UB two-stage volute pumps and Type AN single, direct-acting, air-cooled air compressors.

pH Tester

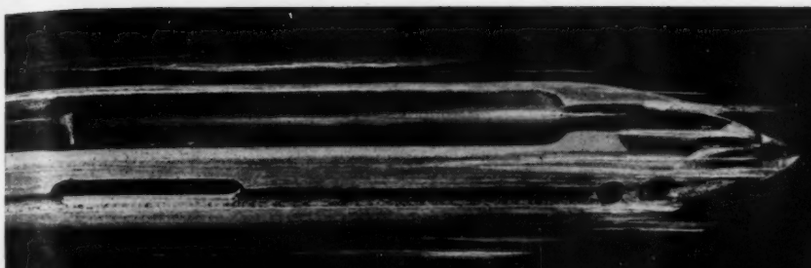
Wilkens-Anderson Co. Booklet entitled "Waco Catalyst," describing Coleman sealed-glass-electrode pH tester for plant or laboratory use. Portability, accuracy, and universal application of the device to plant control problems are emphasized.

Control Instruments

Julien P. Friez & Sons, Inc. Data sheet, showing series of comparative tests of different types of psychrometers and instruments sensing relative humidity directly. Chart points out that all errors are on high side of standard. Also Bulletin K, which amounts to a condensed catalog of air-conditioning instruments. Also illustrated booklet on indicating, recording, and control instruments in air conditioning.

Miscellaneous

Recent issues of manufacturers' publications containing items having a textile slant are as follows: *Oilways*, September, photographs of lubricant application in textile plant; *Houghton Line*, October-November, articles on lubrication and rayon warp sizing; *Kreolite News*, Vol. 19, No. 3, photograph of Kreolite redwood block floors in Interwoven Mills.



How Fast
Do Your Shuttles Run?

On 40 X Models at a speed of 192 Picks
They Run at 38 Feet per Second
On 90 XL Models at a speed of 120 Picks
They Race at 42 Feet per Second

But at the End of Every Pick
This Speed is Checked by a Full Stop

On Your 40 X Model Looms the Shuttle

Makes 11520 Stops per Hour

With This Terrific Speed
And These Sudden Stops

You Must Have Good Shuttles to Weave Good Cloth

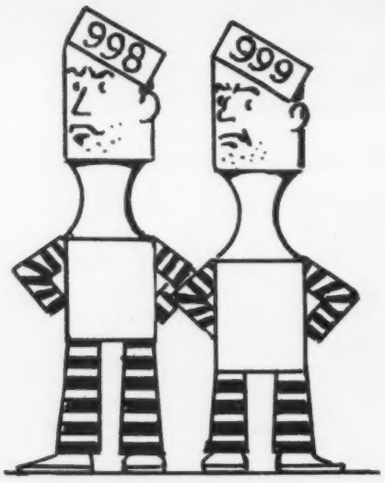
Draper Shuttles Meet These Conditions

With Few Misthreads or Filling Breaks

They Are Custom-Made to
the Conditions in Your Mill

DRAPER CORPORATION
Hopedale Massachusetts
Atlanta Georgia Spartanburg S C

As the Movie title warns us–



"Don't turn 'em loose!"

You can't reform a roll covered with *Leather Substitutes.* It's misbehaving long before it is caught at it, and it's bad from that time on—no matter how much you rebuff it—it quickly goes back to its bad habit of spinning bad yarn and gets away with a lot of it, too, before you catch it again.

How different with rolls covered with GILLEATHER (sheep or calf)! They spin *good yarn* right up to the very last and it's a long spinning life, too. Then, when they won't spin any longer, *you scrap them* and put in fresh ones. No rebuffing—no poor performance—no halfway reform—no yarn waste. Either GILLEATHER is spinning good yarn or it isn't spinning at all. It's the most economical, dependable roller covering.

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Roller Leather

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TWO PARK AVENUE, NEW YORK

COOPER HEWITT ENGINEERED LIGHTING

Low intrinsic brightness eliminates eye-strain . . . *permits uniform production*

Every thread is clearly distinguishable in this cotton mill in South Carolina under restful Cooper Hewitt Mercury Light.

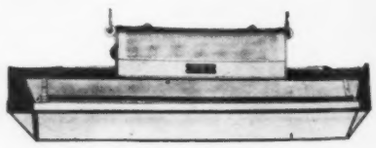
Give your workers cool, shadow-reducing Cooper Hewitt Mercury Light. Glareless, and unvarying in intensity throughout the 24 hours, this light aids more uniform production . . . better work. Its long light source helps operators to see down inside the harness of a loom or other hard-to-light spots.

Cooper Hewitt's yellow-green light alone is the ideal illumination where perception of detail is most important. Where color discrimination is desirable, incandescent lamps can be added to the mercury—achieving a close approximation to daylight. General Electric Vapor Lamp Company engineers are lighting specialists with over 30 years' experience. They will gladly discuss "engineered lighting" for every job with you... General Electric Vapor Lamp Company, 849 Adams Street, Hoboken, New Jersey.

STANDARD MERCURY

The Cooper Hewitt Mercury Light has been the standard of industrial illumination for over thirty years.

COMBINATION MERCURY AND INCANDESCENT



For use where discrimination of color is of paramount importance.

GENERAL ELECTRIC VAPOR LAMP COMPANY

757C

GARMENTS BY KAYSER

We can make prompt deliveries on cotton knitting yarns,—natural, bleached or colored for hosiery, for underwear, or for outerwear. One of our specialties is bleach bottom shades, such as pinks and salmons. We also have had marked success with dark fast-to washing shades that can be safely used next to bleached yarns. An outstanding characteristic of our dyed or bleached knitting yarns is their soft finish.

Our yarn department can duplicate practically any popular count and quality of yarn desired.

Our exceptional experience in yarn dyeing with respect to time, volume and variety is your assurance of performance that is seldom equalled and never surpassed, and—

PERFORMANCE (not price) DETERMINES VALUE

FRANKLIN PROCESS

ESTABLISHED 1910

Pioneers in Package Dyeing

Natural Yarns **Colored Yarns** **Glazed Yarns** **Custom Yarn Dyeing** **Dyeing and Processing Machines**

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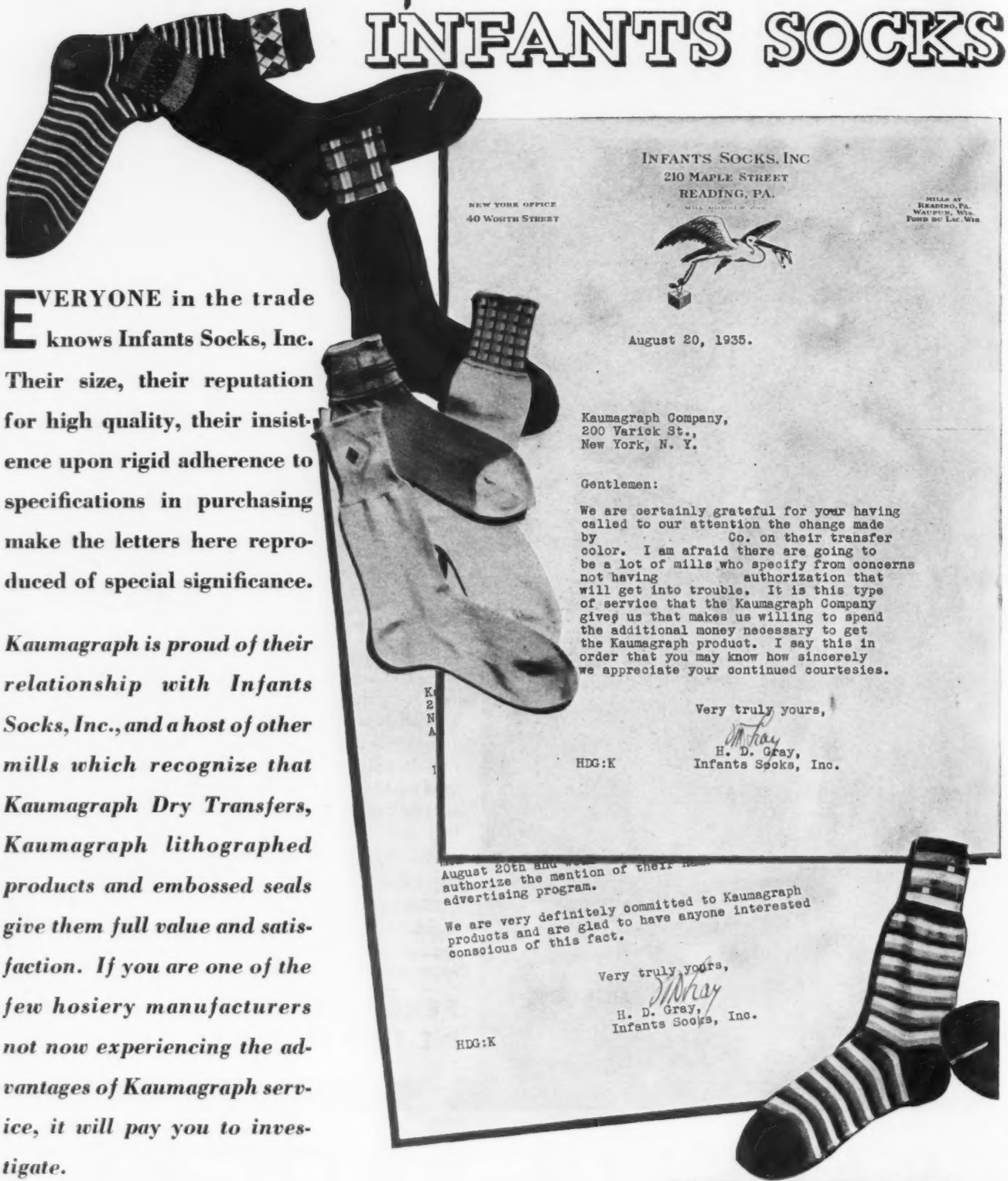
Thank you INFANTS SOCKS


INFANTS SOCKS, INC
210 MAPLE STREET
READING, PA.
NEW YORK OFFICE
40 WORTH STREET
August 20, 1935.
Kaumagraph Company,
200 Varick St.,
New York, N. Y.
Gentlemen:
We are certainly grateful for your having called to our attention the change made by Co. on their transfer color. I am afraid there are going to be a lot of mills who specify from concerns not having authorization that will get into trouble. It is this type of service that the Kaumagraph Company gives us that makes us willing to spend the additional money necessary to get the Kaumagraph product. I say this in order that you may know how sincerely we appreciate your continued courtesies.
Very truly yours,
H. D. Gray,
Infants Socks, Inc.
HDG:K
authorize the mention of their
advertising program.
We are very definitely committed to Kaumagraph products and are glad to have anyone interested conscious of this fact.
Very truly yours,
H. D. Gray,
Infants Socks, Inc.
HDG:K

EVERYONE in the trade knows Infants Socks, Inc. Their size, their reputation for high quality, their insistence upon rigid adherence to specifications in purchasing make the letters here reproduced of special significance.

Kaumagraph is proud of their relationship with Infants Socks, Inc., and a host of other mills which recognize that Kaumagraph Dry Transfers, Kaumagraph lithographed products and embossed seals give them full value and satisfaction. If you are one of the few hosiery manufacturers not now experiencing the advantages of Kaumagraph service, it will pay you to investigate.

KAUMAGRAPH, NEW YORK

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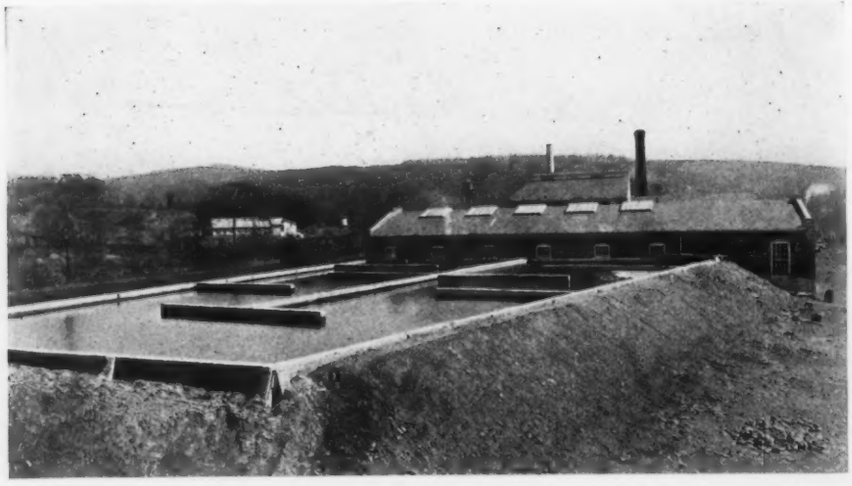
BARBER-COLMAN

SPOOLERS AND WARPERS

WATER PURIFICATION PLANTS
DESIGNED—CONSTRUCTED—GUARANTEED
by HUNGERFORD & TERRY, INC., Clayton, N. J.

CRYSTAL CLEAR FILTERED WATER AT 3c PER 1000 GALS.



EXTERIOR VIEW 2,000,000 GALLONS PER DAY
HUNGERFORD AIR-WATER-WASH FILTER PLANT

Hungerford Air-Water-Wash Filter Plants are properly designed, durably constructed and sold with a 3 year guarantee. They are inexpensive in first cost. *And operating costs are astonishingly low.* To illustrate we give you the figures on a plant that was just recently installed and placed in operation.

This is a 250 gallons per minute Air-Water-Wash Filter Plant. It cost completely installed and placed in operation, $6000. It carries a 3-year guarantee on the plant—a guaranteed definite flow—and a guaranteed filtered water analysis.

The total operating cost, including pumping, chemical, attendance and interest and depreciation on this 250 gallons per minute filter plant is 3 cents per 1000 gallons of water.

Costs vary somewhat with conditions of installation, size of plant and requirements for which the water is to be used. However, with quality so important a factor in the sale of all textile goods no textile mill can afford to be without crystal clear water at so low a cost.

Send for our representative to check over your water supply. No charge. No obligation.

HUNGERFORD & TERRY, INC.
Clayton, New Jersey

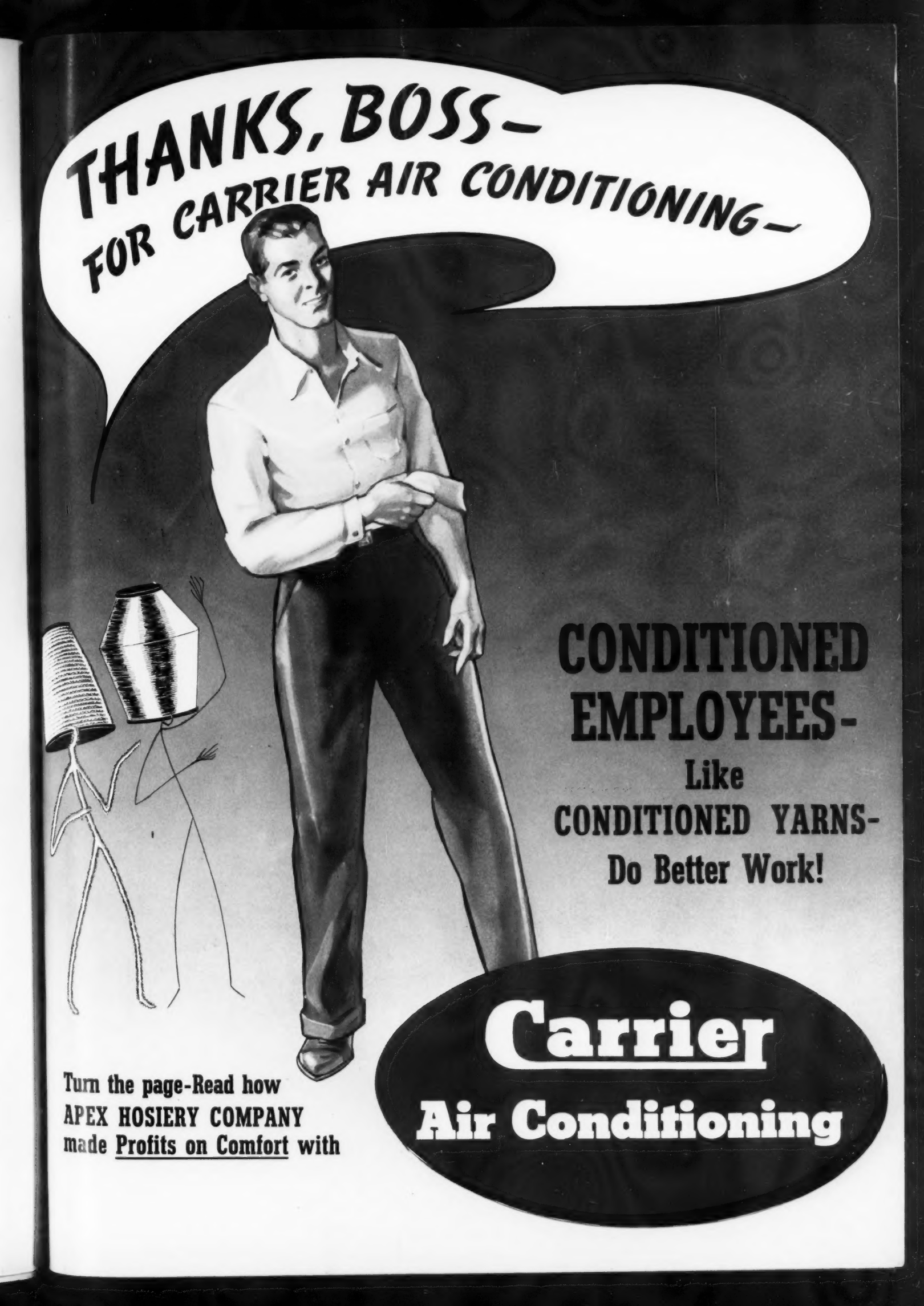
Gentlemen: Please send me without obligation literature on Water Purification ☐
You may have an engineer call ☐

NAME .....

COMPANY .....

ADDRESS .....

Also builders of the INVERSAND Zeolite Water Softener, Hungerford Deoiling Filter, Chemical Feeders, BASEX and HI-BASEX Zeolites.


THANKS, BOSS—
FOR CARRIER AIR CONDITIONING—
CONDITIONED EMPLOYEES-
Like
CONDITIONED YARNS-
Do Better Work!
Turn the page-Read how
APEX HOSIERY COMPANY
made Profits on Comfort with
Carrier
Air Conditioning

PROVED AGAIN!

IT PAYS TO HAVE

Carrier
Air Conditioning

IT'S a well-known fact that yarns have more life and stamina—snarl and snap less frequently when the temperature and humidity are controlled. But how about your employees—the men and women responsible for the success of your finished product? Don't they deserve the same consideration?

Apex Hosiery Company finds that it pays to make employees more comfortable—not only in loyalty and appreciation, but in cash savings as well. In the boarding room, for example, where employees formerly worked in a sweltering atmosphere made more uncomfortable by traffic noises, Carrier Ventilation now draws away the humid air, replaces it with cool, healthfully conditioned air. No open windows. No distracting street noises. Less soilage. Result: Increased production, better products, fewer seconds.

The inspection department, packing department, as well as the general and private offices, all are more efficient through the comfort supplied by Carrier spray type air conditioning. The removal of perspiration from workers in the packing and inspection rooms, saves countless pairs of hosiery from spoilage. In the dye house a third section of the Carrier equipment performs still another task to make working conditions more pleasant and production more efficient—by clearing the air of fumes and fog.

Why did Apex Hosiery Company turn to Carrier for its installation? For several reasons. Convenient location of units and ease of installation. Safety of refrigerant used. The fact that Carrier engineers have had more than 25 years' experience, devoted solely to the creation* and development of the art of air conditioning. It was Carrier, and Carrier ingenuity, that made possible the commercial production of rayon. Carrier's knowledge of hygrometry has made possible the successful Carrier air conditioning in silk, wool, cotton and rayon mills throughout the world. While the story of Apex Hosiery is still before you—mail the coupon. Learn how to CarriAIRize by improving the product and the comfort of your employees, and save money.

CARRIER CORPORATION
850 Frelinghuysen Avenue, Newark, N. J., Desk 605

☐ Send me more information on Carrier Air Conditioning for my offices, boarding rooms, shipping and inspection departments. ☐ Send me information on Carrier Industrial Air Conditioning for my yarns.

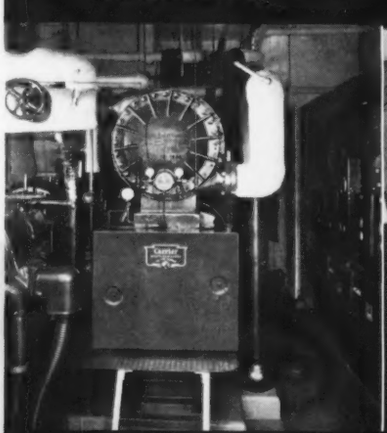
Name.....

Address.....

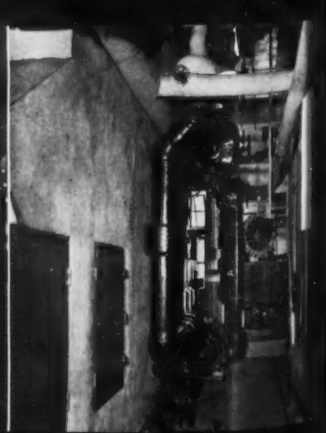
*Willis H. Carrier in 1911 founded the new industry when he disclosed the scientific laws of Air Conditioning to the American Society of Mechanical Engineers and began making air conditioning installations.

In the Apex boarding rooms, air is completely changed every 3 to 5 minutes by Carrier Ventilation. Clean . . . Comfortable . . .Quiet.

No perspiration, dust or dirt damages hosiery in the Apex inspection and packing departments—thanks to Carrier Air Conditioning.



Close up of Carrier centrifugal machine—available in various sizes to meet all air conditioning needs efficiently and economically.



Carrier Dehumidifiers used in conditioning the Apex Hosiery Company. At far end—Carrier centrifugal machine and switch panels.

L. F. Dommerich & Company

Executive and General Offices

271 MADISON AVENUE
NEW YORK, N. Y.

Telephone: AShland 4-8650

FACTORS

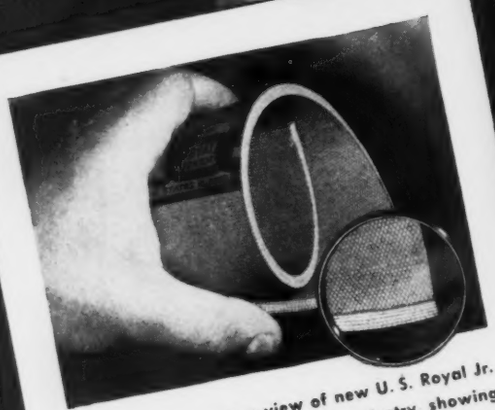
For Manufacturers and Merchants

Inquiries as to our services solicited

●

ESTABLISHED 1840

THRIVES ON HIGH SPEEDS



Close-up cross-section view of new U. S. Royal Jr. Transmission Belt for the textile industry, showing construction features of flexible layers of tough cotton duck thoroughly impregnated with live rubber.

This machine accurately determines the efficiency of U. S. Rubber Transmission Belts under varying tensions. It measures with mathematical precision the horse-power delivered by the belt at different speeds and under working conditions simulating actual textile mill use. This is one of the tests from which the new U. S. Royal Jr. Belt was developed.

FORESTS OF BELTS

Every textile mill is literally a forest of belts, powering cards, spinners, and looms. U. S. Royal Jr. Belts are designed to meet the requirements of every type of textile drive, giving outstanding performance despite high speeds, crossed drives, and frequent shifting.

CROSSED DRIVES, SHIFTING!

UNITED STATES RUBBER COMPANY
TRADE MARK

United States Rubber Company

TEXACO AT

NO DISCOLORATION

You will get less spoilage with Texaco Summitlube because it is white.

Years of experimental work in the laboratory and under actual service conditions in textile mills back this new product.

Careful selection of ingredients and constant checking of compounding processes enable us to give Summitlube its stability and high lubricating qualities.

In your ring travelers, Summitlube will reduce wear, and give you less drag with fewer ends down.

In all types of textile machinery where discoloration can spoil goods, or require extra process to remove it, you will find marked economy by using Summitlube.

A Texaco representative will be glad to provide practical engineering service to prove the efficiency of Texaco Summitlube.

☆ ☆ ☆

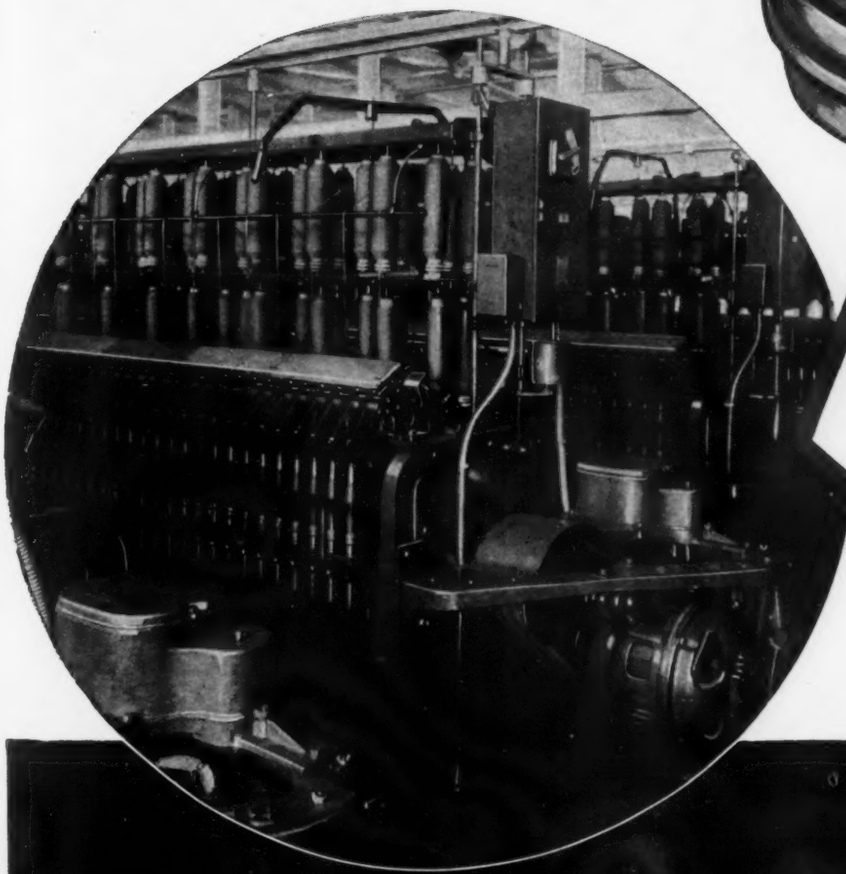
THE TEXAS COMPANY · 135 E. 42nd St., N. Y.

Nation-wide distribution facilities assure prompt delivery

TEXACO

The New TEXACO

WORK



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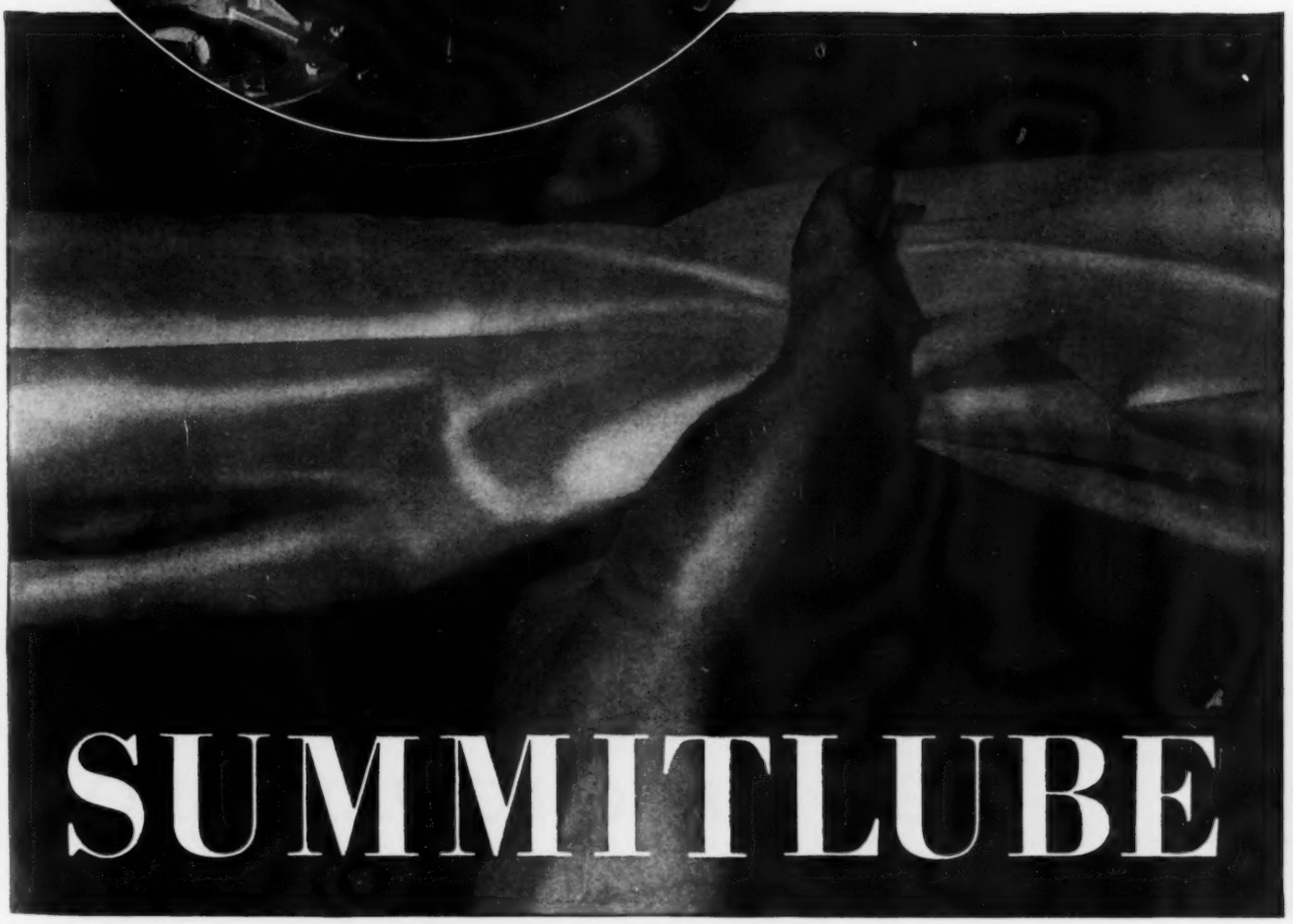
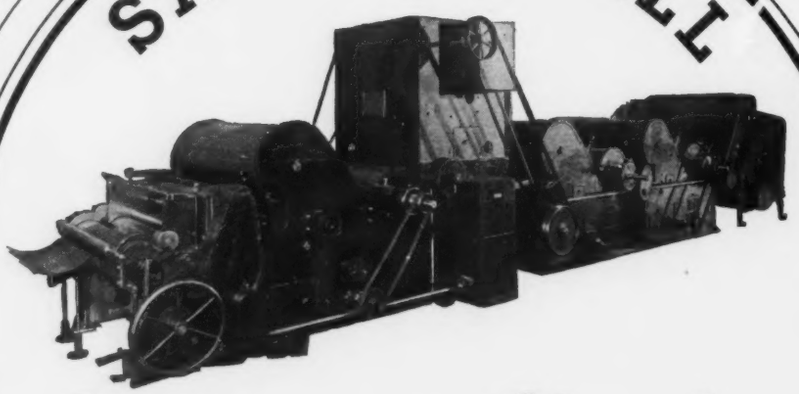


SUMMITLUBE

More than 5,000,000 *Spindles*

are now being supplied
with cotton prepared by

SACO-LOWELL



Cleaning & Blending
Reserves

Ultimately Your Picking will be Saco-Lowell

Since March, 1936, these mills have selected Saco-Lowell Cleaning and Blending Reserves as an important step in the modernizing of their plants

Proximity Mfg. Co., Greensboro, N. C.
Revolution Cotton Mills, Greensboro, N. C.
Naumkeag Steam Cotton Co., Salem, Mass.
Woodside Cotton Mills Co., Greenville, S. C.
Dallas Mfg. Co., Huntsville, Ala.
Lockwood Company, Waterville, Maine
Pacolet Mfg. Co., New Holland, Ga.
Pacific Mills, Lyman, S. C.
Louisville Textiles, Inc., Louisville, Ky.
Dunson Mills, La Grange, Ga.
Wabasso Cotton Co., Three Rivers, Que.
White Mills, East Jaffrey, N. H.
Grosvenor Dale Co., Grosvenor Dale, Conn.
Falls Company, Norwich, Conn.
Inman Mills, Inc., Inman, S. C.
Wallace Mfg. Co., Jonesville, S. C.
Hannah Pickett Mills, Rockingham, N. C.
Moultrie Cotton Mills, Moultrie, Ga.
Firestone Cotton Mills, New Bedford, Mass.
Woodside Cotton Mills Co., Simpsonville, S. C.
Woodside Cotton Mills Co., Fountain Inn, S. C.
" " Easley No. 1 — Easley, S. C.
" " Easley No. 2 — Liberty, S. C.
" " Easley No. 3 — Liberty, S. C.
Piedmont Mfg. Co., Piedmont, S. C.

It cannot be otherwise if you are interested in keeping abreast of the industry. Since March, 1935, the cotton for 5,000,000 active spindles has been prepared by means of Cleaning and Blending Reserves.

Even laps made from cotton effectively cleaned and thoroughly blended . . . without fibre damage . . . at costs lower than average for operating and upkeep are some of the basic facts which have built up this decided preference for Saco-Lowell Equipment. If you are still using obsolete preparatory equipment —INVESTIGATE!

MODERNIZE *to Economize*

SACO-LOWELL SHOPS

147 Milk Street, Boston, Mass.

FAST COLOR

THE year 1936 has been distinguished by an unprecedented increase in the use of fast colors for both dyeing and printing textile fabrics. This can be directly attributed to the fact that the public is demanding better quality merchandise, particularly with respect to color permanence. A quality fabric should not be colored with dyes of mediocre fastness. The durability of the decoration should, as far as possible, be as lasting as the fabric itself. To the consumer, this is as important as are style and texture.

It is a known fact that, as a class, vat dyes are more resistant to color-destroying influences than any others. Why not extend their use? The demand is definitely here. There are innumerable fabrics which could be enhanced in both quality and permanence if colored with vat dyes. Extensive opportunities still exist for greater utilization of vat dyes in the printing and dyeing of drapery and upholstery materials, dress fabrics, pajama cloths, work clothes, uniform cloths and many others. These materials are all expected to possess excellent wearing properties and should be colored with vat dyes wherever possible. The color will then outlive the usefulness of the fabric itself.

Du Pont, the pioneer manufacturer of vat dyes in America, offers these under the registered names of "Ponsol," "Leucosol" and "Sulfanthrene." The range includes many specialties purposely adapted to meet special requirements to facilitate their use.

Research in application methods and the study of new products is constantly in progress. Thus, original developments may be expected which will further assist dyer and printer in extending the use of vat dyes.

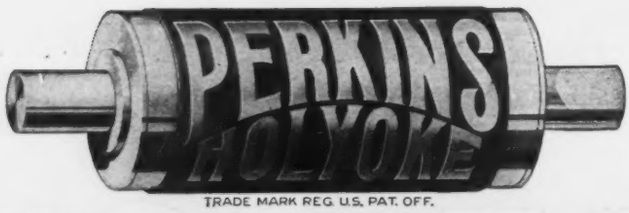
DU PONT DYESTUFFS
REG. U.S. PAT. OFF.

E. I. DU PONT DE NEMOURS & CO., INC.
ORGANIC CHEMICALS DEPARTMENT, DYESTUFFS DIVISION
WILMINGTON, DELAWARE

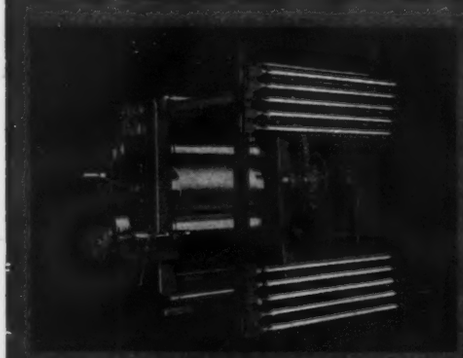
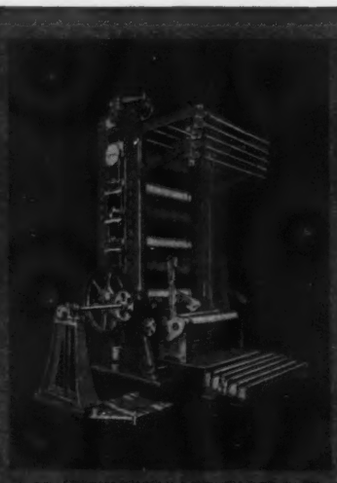
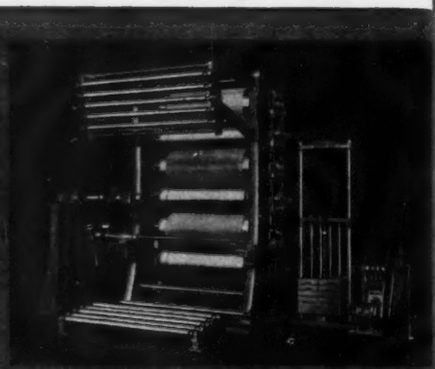
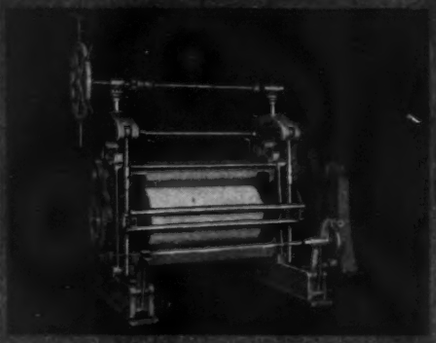
B. F. PERKINS & SON, Inc.

Established 1873

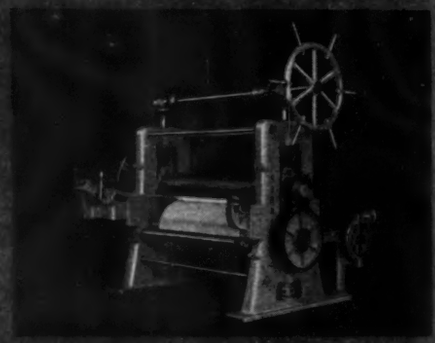
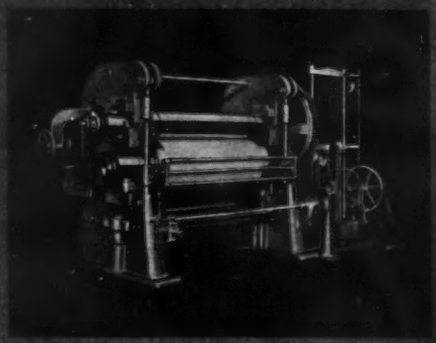
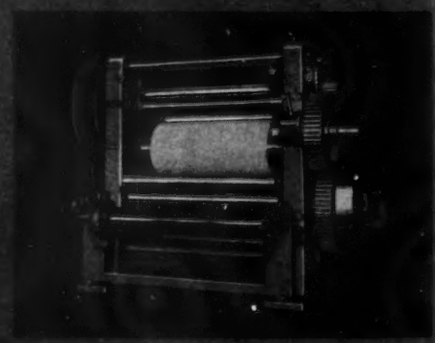
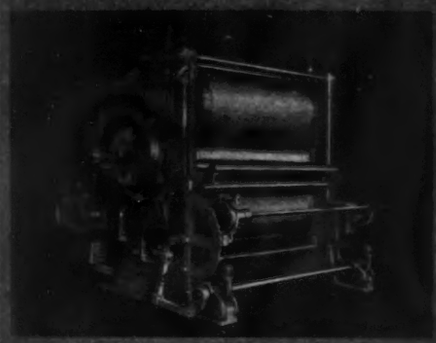
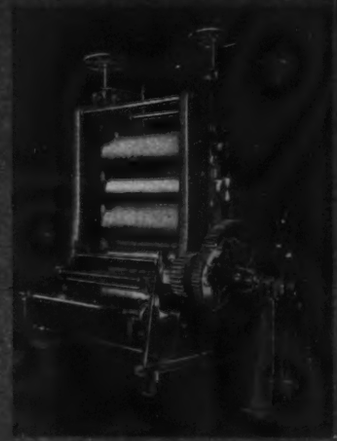
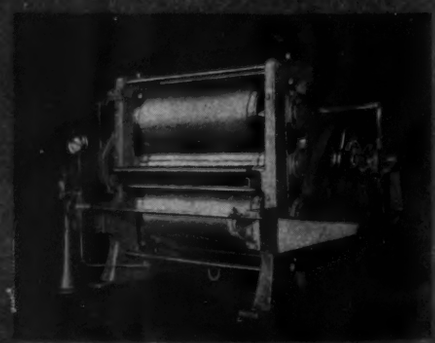
HOLYOKE, MASS.



TRADE MARK REG. U.S. PAT. OFF.

THERE IS NO SUBSTITUTE FOR PERKINS QUALITY

...and Oil for the MINDS IN YOUR PLANT!
SOCONY-VACUUM Will Help Your Men Better the Work they do for You
YOU WILL FIND that your own men—those who know your problems best — will quickly find use in their daily problems for Socony-Vacuum's friendly cooperation and 70 years of practical experience.
Here, a valuable suggestion; there, a new idea, enable them to work out worth-while efficiencies and economies.
That is why thousands of plants—many in your own locality—will tell you one of the best reasons for doing business with Socony-Vacuum is the kind of help their men get. Try this in your plant and see!
SEE THE FOLLOWING PAGE...

FOR LOWER COSTS— LESS SPOILAGE!

Give your operators Gargoyle Lubricants to help them boost profits

MANY OF OUR BEST customers in the textile field once used other oils. But they found after careful comparison that Gargoyle Lubricants enabled them to lower power costs and spoilage rates.

Let your loom fixers and section foremen concentrate on production schedules. Put the lubrication of your mill up to Socony-Vacuum. We'll pass on to your men practical experience gained in thousands of mills.

GARGOYLE Lubricants

SOCONY-VACUUM OIL CO.
INCORPORATED

STANDARD OIL OF NEW YORK DIVISION · WHITE STAR DIVISION · LUBRITE DIVISION · WHITE EAGLE DIVISION
WADHAMS OIL COMPANY · MAGNOLIA PETROLEUM COMPANY · GENERAL PETROLEUM CORPORATION OF CALIFORNIA

Cellosolve

...is an excellent dye solvent, prevents spotty results, and saves on dyeing costs, particularly with the newer naphthols.

CELLOSOLVE* produces a true solution of most dyestuffs. This, in part at least, is due to its chemical structure ($C_2H_5OC_2H_4OH$). As will be noticed from its formula, Cellosolve is an alcohol and an ether, and approaches the hydrocarbons in structure. It partakes of some of the versatile and powerful solvent properties of these three chemical families . . . and combines their properties with that of water, in which it is completely soluble.

For instance, the naphthol dyestuffs are far easier to handle when Cellosolve is employed to aid solution. These color intermediates must be reacted with caustic. Some solvent is required to paste the naphthol, or the caustic will not react. Further, the solution in the alkali should be clear and free from suspended particles of the naphthol. Cellosolve, used as a pasting solvent, accomplishes both these results. The resulting solution is clearer than with other solvents, shows less settling over a given period of time, and gives clearer dyeings with less "crocking". It actually saves dyestuff.

With many other types of dyes and in other applications, Cellosolve shows a similar improvement in results. We suggest that you try this solvent in your dyeings. A sample will be sent upon request.

*Trade-mark

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

GAIN PRECISION CONTROL

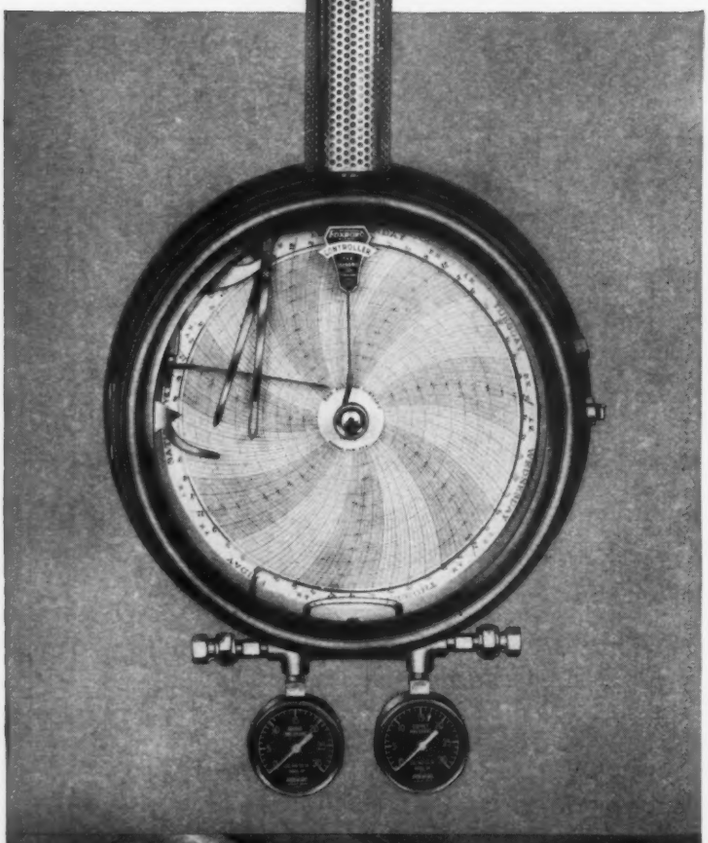
OF YOUR

WEAVING CLIMATE

FOR

STRONG, FLEXIBLE

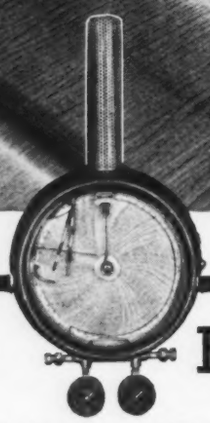
FIBRES



Proper humidity facilitates manufacture of all textile fibres. It keeps the fibres strong and flexible, keeps them from becoming fluffy, from breaking, from becoming charged with electricity. It enables the fibres to "lay up" closely so as to produce a fine, smooth product. The finest manufacturing conditions can be maintained day after day, winter and summer alike, with Foxboro Humidity Control.

Moreover, the weight of finished textiles can be equal to the weight of the raw fibres. There need be no loss such as dry, warm mill workrooms normally produce. Each department can have the exact humidity required for most economical manufacture.

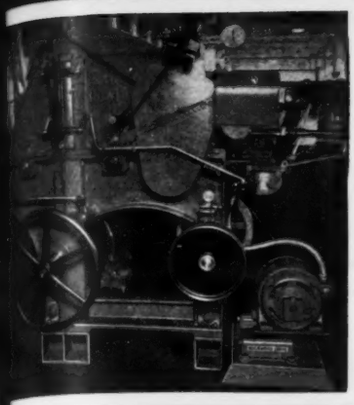
Foxboro's long years of experience in humidity control and its comprehensive line of instruments assure the most efficient and economical control for each and every service. Write for information to the Textile Division, The Foxboro Company, 84 Neponset Avenue, Foxboro Mass., U. S. A. . . . Atlanta Office: 161 Spring Street Building. Branch Offices in 25 Principal Cities.



FOXBORO HUMIDITY CONTROL

ACCURACY FOXBORO *RESPONSE*

REG. U. S. PAT. OFF



Rockwood Standard Floor Bases are used in many places in cotton mills. This one is driving a silver lapper. *The Rockwood Drive for the first time makes short center drives truly satisfactory.*

The cotton textile industry says

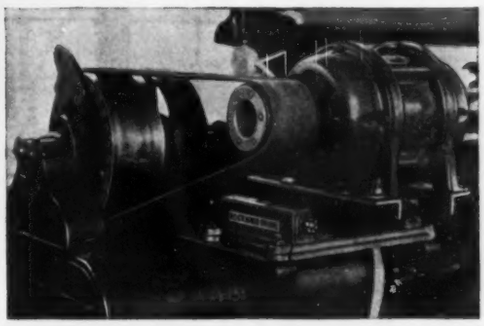
No other drive has so many advantages

THE parade of Rockwood Drives into cotton mills continues — in ever increasing numbers.

Their use insures increased output and a better quality of work done because they automatically maintain uniform belt tensions, regardless of changes in belt lengths. Thus the flow of power is smoother and more dependable. They give a freedom from drive trouble and annoyance that plant men are enthusiastic about.

The Rockwood *pivoted motor* Drive is supplied in several different types for textile machinery. The textile industry says that each type gives advantages they can secure in no other manner.

Whether you have one drive or a mill full, it will pay you to have a Rockwood engineer call before you make any changes.



Standard Rockwood Drive Base on bracket to drive Foster winder. A practical, inexpensive and highly successful application. The speed of the winder is maintained religiously and AUTOMATICALLY.

One of the many Rockwood "no maintenance" Ceiling Type Drives in cotton mill use. This is a 75 H.P. motor, 880 R.P.M., in card room—14½-inch Rockwood Motor Pulley to 48-inch Rockwood Split Lineshaft Pulley.

From the standpoint of driven machine performance . . . uniformity of speed . . . savings in power . . . elimination of maintenance troubles . . . quality of work done . . . Rockwood Drives have proven far superior.

Hold 'em boy!

Don't let your grip slip! Hold 'em like a Rockwood Pulley holds the belt. Then he can't get away.

ROCKWOOD PAPER PULLEYS

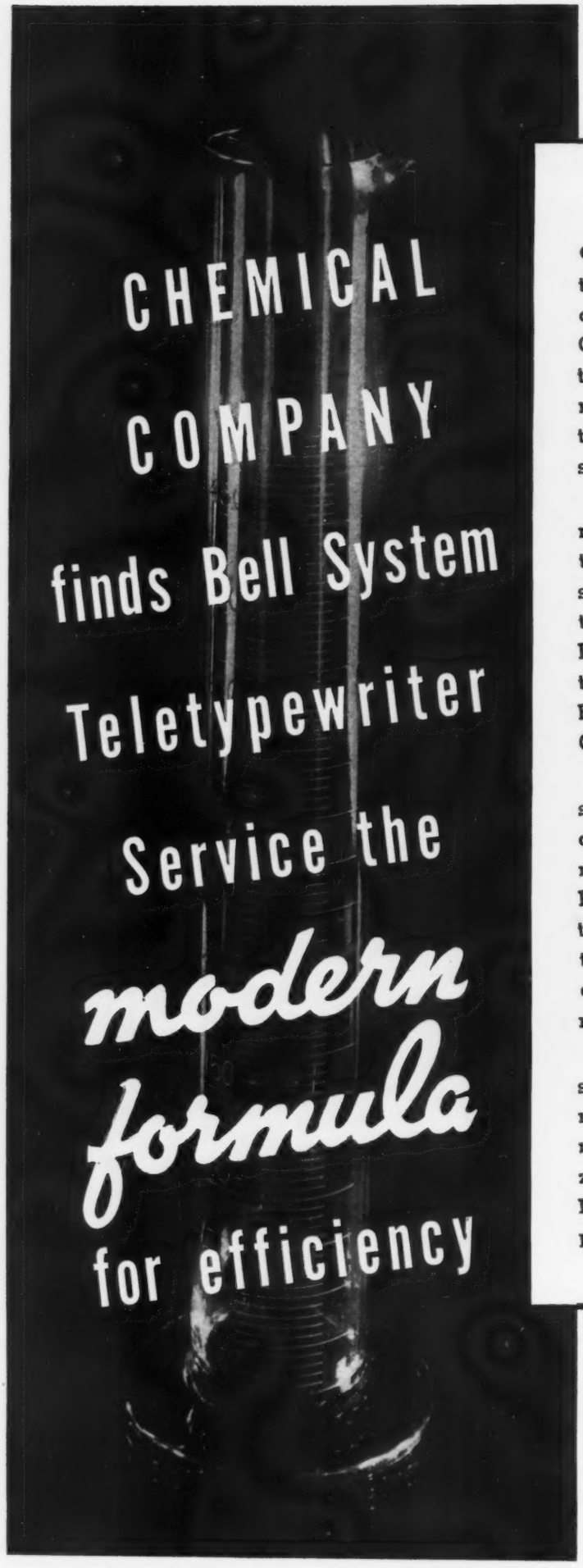
The wonderful belt gripping surface of the end-grain fibres in Rockwood Paper Pulleys will make a saving on both ends of your drives. They grip a belt as no other pulley possibly can. Bear in mind: "Metal pulleys slip—Rockwood Pulleys grip."

ROCKWOOD PIVOTED MOTOR DRIVES

THE ROCKWOOD MANUFACTURING COMPANY

Division of General Fibre Products, Inc.

Indianapolis, Indiana

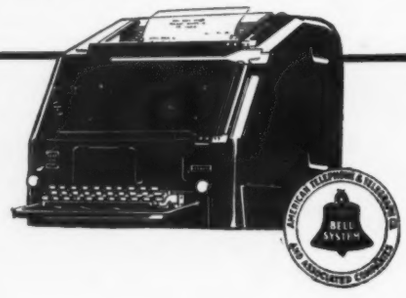


● THE manner in which one industry utilizes the accomplishments of another to increase its own efficiency is demonstrated by Monsanto Chemical Company's use of Bell System Teletypewriter Service. Monsanto needed faster, more accurate communication between distant offices and plants. A Bell System representative was called in to analyze the problem.

A study was made of the company's communication needs and it was recommended that teletypewriter service be installed at strategic points—private line service between the St. Louis headquarters and the Monsanto, Illinois, plant; teletypewriter exchange service to link production plants at Anniston, Ala., Everett, Mass., Camden, N. J., and Dayton, Ohio, with St. Louis and the New York office.

Results: Orders typed at one office are now simultaneously, accurately reproduced at any connected point, on the Monsanto Company's regular forms, with all necessary carbons. For example, St. Louis gives orders to Anniston and receives information on shipments on the same connection. Shipments are made and invoices mailed the same day orders are received. Customers get quicker service.

A Bell System representative will be glad to study your communication problem—co-ordinate and speed up the transmission of information between separate units of your organization—whether 300 yards or 3000 miles apart. No obligation. Simply call your nearest telephone office.



AS SEAMLESS SALES SPEED UP

Shipments of all types of hosiery were 5.8 per cent greater for the first half of 1936 than for the first half of 1935. But shipments of women's seamless hosiery showed the greatest gain—a 13.6 per cent increase. Are you taking advantage of this demand? The MODEL K SPIRAL GUSSETOE MACHINE enables you to meet it efficiently and economically with better-fitting, smarter-looking stockings that possess exclusive selling features—the welt of greater elasticity, the non-slip, improved "square" heel, and the famous Gussetoe, an actual knit-in gusset. These are features that mean sales, savings and profits . . . Why not use the *modern* K to give your line impetus in the increasingly active seamless field?

Established 1865

SCOTT & WILLIAMS

Incorporated

366 BROADWAY, NEW YORK, N. Y.

THE MODEL K SPIRAL GUSSETOE MACHINE

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

Brighten Up Your Line

with new ideas like these

THE HH-NRP machine is a pattern creating machine. It enables you to give practical expression to your best ideas. The samples shown here are just a few of the unusual designs it makes possible. For Needle Reverse Plating — with 25 steps — has now been added to the recognized HH efficiency . . . and the pattern scope is greatly increased. Perfectly plaited half-hose — Argyles, all-over patterns, stripes and clocks, with all yarns or any combination of yarns — are yours on the HH-NRP. Add the ability to duplicate the English plain foot bottom and the advantages of this machine are obvious. Why not use it to brighten up your line with styles that rival the most expensive importations?

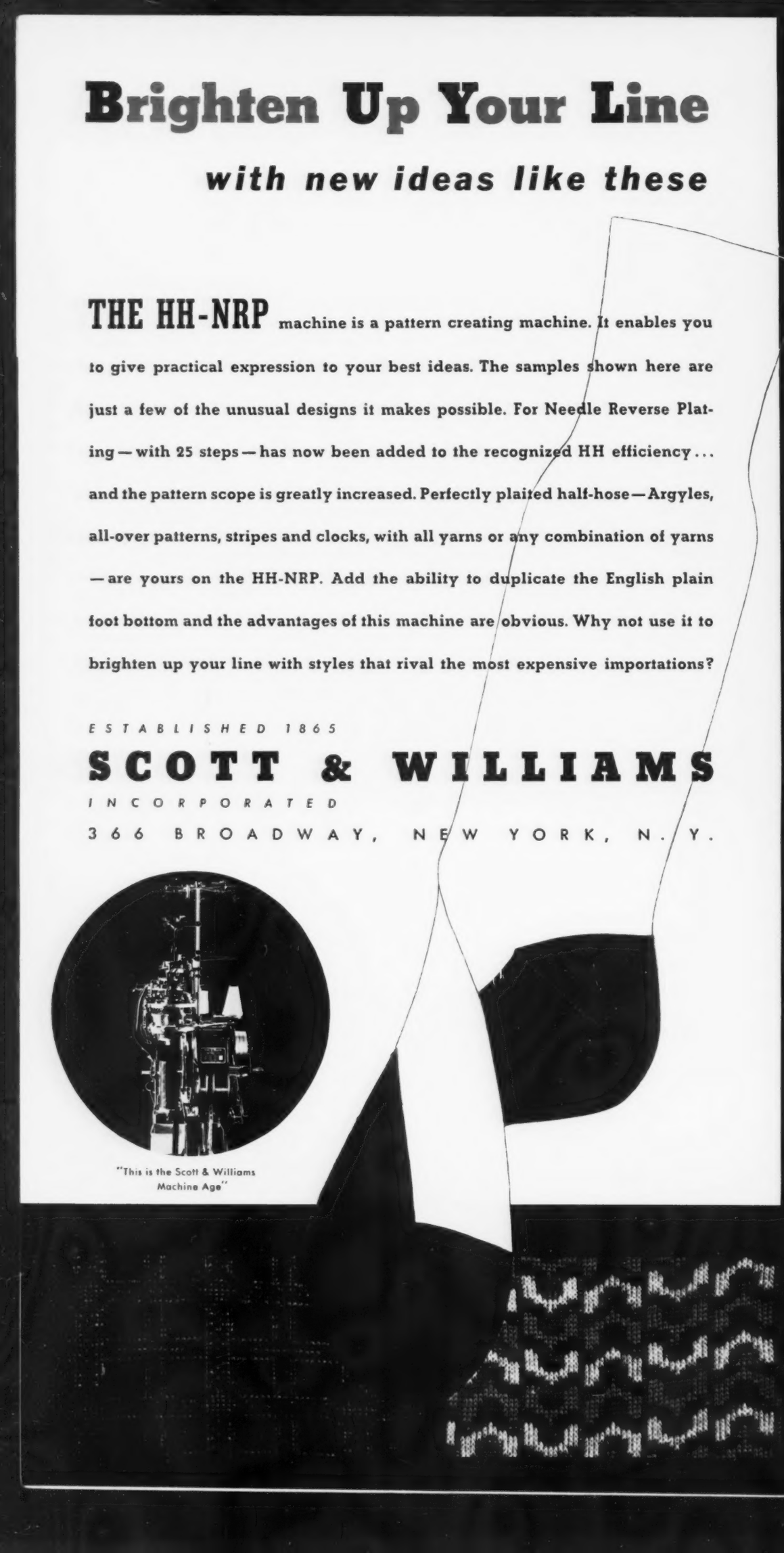
ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

366 BROADWAY, NEW YORK, N. Y.

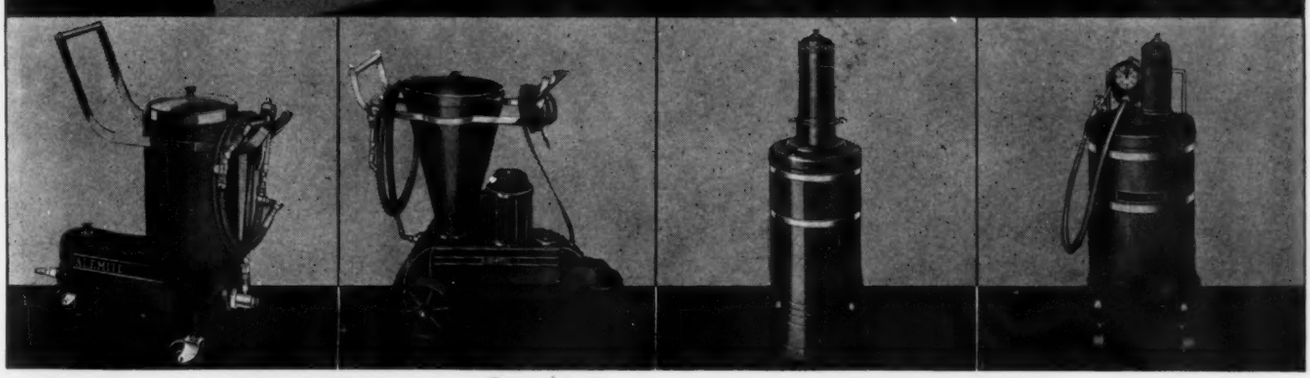
"This is the Scott & Williams Machine Age"



WHEN YOU USE THESE

Guns FOR THE War WITH Friction

YOU WIN EVERY SKIRMISH!



In Textile Mills Everywhere Alemite Controlled Lubrication Realizes Big Gains for Users

THESE guns never miss their mark! They force lubricant, under tremendous pressure to every part of the bearing surface. They lick friction on every kind of textile machinery.

Alemite Controlled Lubrication shows big gains for textile manufacturers in every field. Perhaps the most important is the gain in machine efficiency—through bearing failures avoided, breakdowns prevented, and production maintained.

There is no contamination of product, machinery or floors when Alemite Guns are used. Time is saved because they are quick, clean, efficient. Lubricant savings alone may mount into considerable money, because there is no waste when Alemite Guns meter the lubricant.

Put these guns to work in *your* War with Friction! There's an Alemite System, power or manually operated, which can meet your requirements exactly. Installation is easy. Cost is small. Production need not be interrupted. Read the money-saving facts in our new FREE manual, "The Case of Alemite vs. Friction." Mail the coupon today.

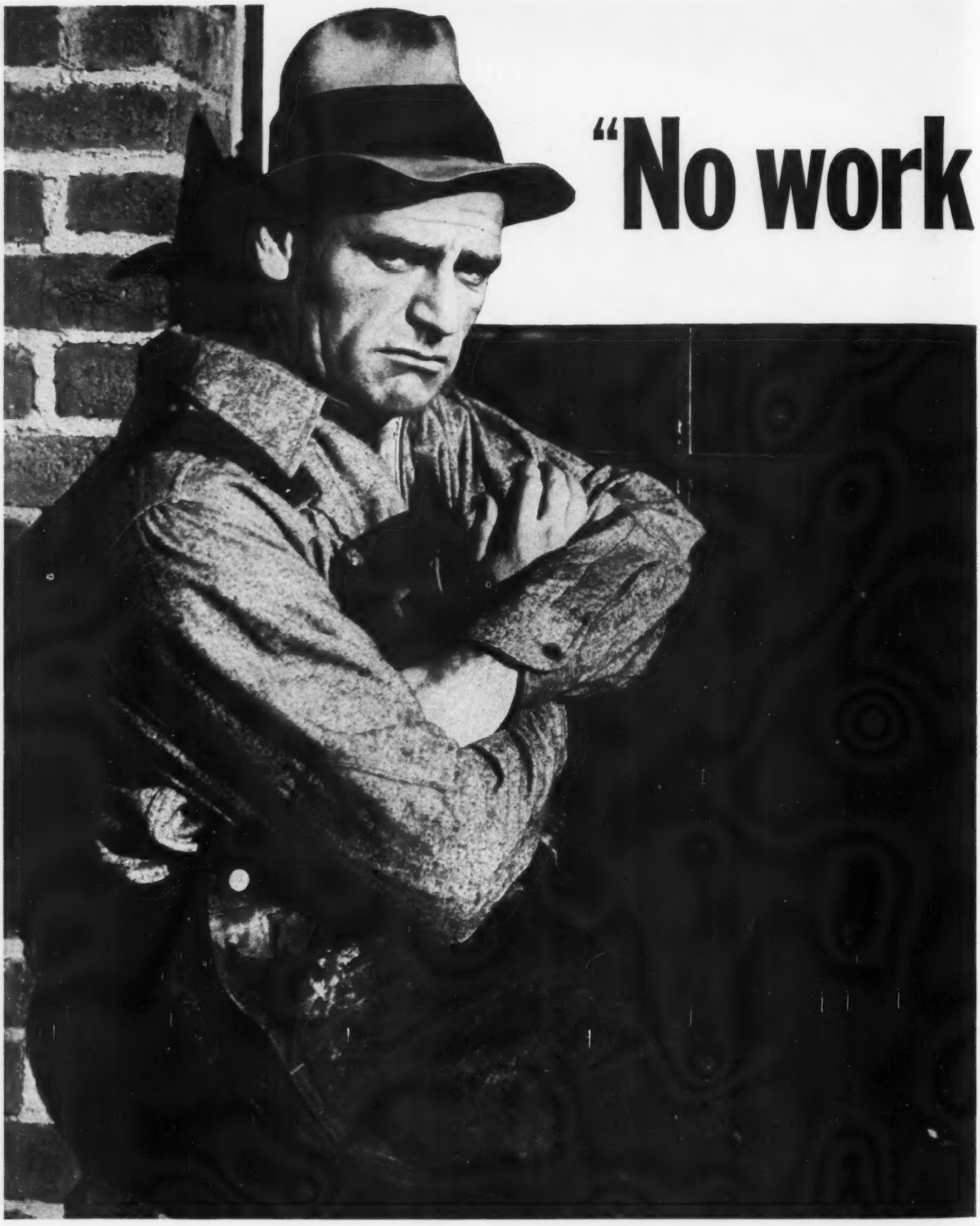
ALEMITE—*A Div. of Stewart-Warner Corp'n.*
1888 Diversey Parkway, Chicago, Ill.
Stewart-Warner-Alemite Corp'n. of Canada, Ltd., Belleville, Ontario, Canada

Enjoy Horace Heidt and his Alemite Brigadiers every Monday Evening, CBS Coast-to-Coast Network. See local papers for time of broadcast.

ALEMITE
REG. U. S. PAT. OFF.
WORLD'S LARGEST MANUFACTURERS OF LUBRICATION PRODUCTS

ALEMITE—*A Div. of Stewart-Warner Corp'n.* Dept. L
1888 Diversey Parkway, Chicago, Ill.
Please send your new free manual, "The Case of Alemite vs. Friction."

Name.....
Address..... State.....
City.....
Firm Name.....



ANACONDA
from mine to consumer
REG. U.S. PAT. OFF.

Anaconda Wire &

General Offices: 25 Broadway, N. Y. • Chicago Office: 20 North Wacker Drive

today...the feeder blew"

Modernize those obsolete, deficient electric circuits now! One breakdown may cost thousands in interrupted production. Let us send you a free check chart with which to make a Wiring Survey of your plant

To many manufacturers, speed-ups in production are proving dangerous. Undersized or antiquated cables can't stand the strain. A typical example: a main feeder blew, crippling production in one department. Other departments dependent upon the first one were forced to stop. Result: practically a complete shut-down for twenty-four hours! All because management had failed to modernize wiring!

9 out of 10 factories have deficient wiring—Estimates show that 9 out of 10 plants today are handicapped by antiquated electric circuits. Even when actual breakdowns do not occur, money is being lost in other ways. Power wasted through heat losses is one. Excessive maintenance and repair costs is another. Slowing down of machines due to voltage drops is a third.

Often the losses are *invisible!* They are not billed to the treasurer, yet he pays for them just the same. In every case, the proverbial "stitch in time" would remedy matters.

Check up your factory's electric circuits—Are you getting full use of the power you buy? It will cost you nothing to find out. This Survey is yours for the asking. It will show you how to check your factory's circuits.

Get our Wiring Survey

Write for it—then put the problem up to your electrical engineer, your industrial consultant, or electrical contractor. If you have a specific problem in mind, consult our engineering department. We will cooperate without obligation.

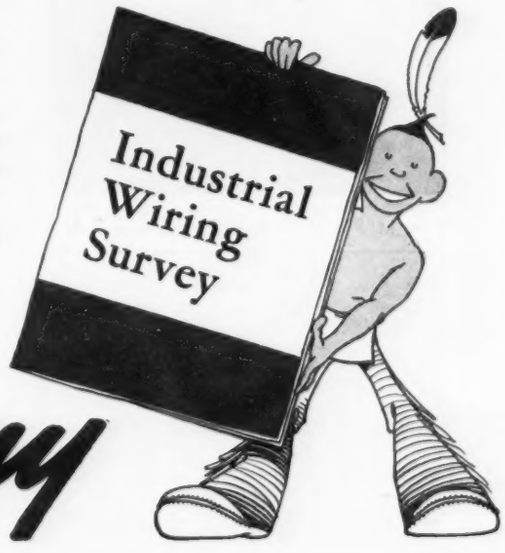
. . .

"In justice to labor... in fairness to capital... modernize the electric wiring in your plant."

SEND FOR YOUR COPY

Modernized wiring aids plant operation in these 6 ways

1. Prevents breakdowns that retard production and cause labor to lose wages.
2. Prevents light losses and slowing down of machines due to voltage drop.
3. Prevents dissipation of power in form of heat losses.
4. Lowers maintenance and repair costs.
5. Permits shifting of equipment or installation of new machinery with minimum delay.
6. Protects safety of workers and lowers insurance rates.



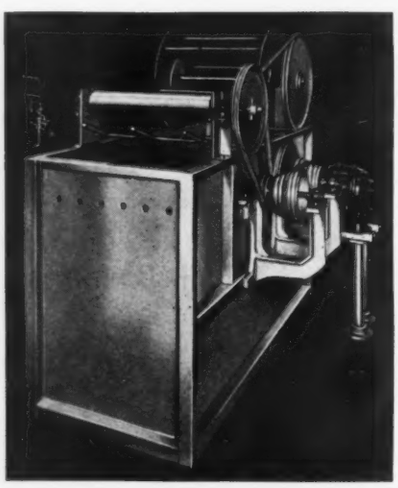
Cable Company

Sales Offices in Principal Cities

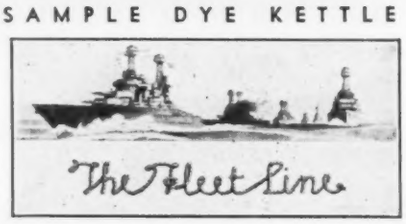
The Fleet MAKES HISTORY

THE BOMBARDMENT OF TRIPOLI

This occurred on August 3, 1804 during the War with Tripoli. It was carried out by a small American squadron commanded by Commodore Edward Preble. In spite of the fact that the Tripolitan Fleet outnumbered them and also had the support of the shore batteries, the Americans courageously grappled with the Tripolitan ships at close quarters and soon put the enemy to rout with heavy losses. American shells also did heavy damage within the city. Lieutenant James Decatur was killed in this engagement through the treachery of a Tripolitan Captain who had surrendered.



SAMPLE DYE KETTLE



Continuous Cloth Washer • Stainless Fulling Mill • Cloth Washer • Metal Piece Dye Kettles • Rope Soapers • Silk Dye Beck • Bleach Tub • Cloth Carbonizing Machine • All Metal Pusher Mill • Stainless Metal Reels • Wood, Rubber and Metal Rolls • Linings, etc.

THE United States Fleet made creditable history at Tripoli because of superior courage and superior fighting skill.

The Fleet Line of wet finishing equipment is making creditable history in to-day's struggle for textile supremacy, because of superior design and superior materials.

The Sample Dye Kettle illustrated herewith is a typical example of this superiority. It is comparatively inexpensive and yet answers the great majority of sample requirements. With slight changes in the dimensions, it can be made to hold up to 150 lbs. of woolens or worsteds. Other features are as follows:—

Stainless steel construction • 5 speed V belt (noiseless, greaseless, no slip) • direct motor drive • ball bearings • solid rubber plug.

This machine (and all other Fleet Line equipment) is sold with a satisfaction or money back guarantee. Further information on request.

RIGGS AND LOMBARD
INCORPORATED

LOWELL MASSACHUSETTS

THE INDUSTRIAL DRYER CORPORATION
manufacturers of "H-W" conditioners and mullers

P. O. BOX 850
STAMFORD
CONNECTICUT

October 27th, 1936.

The Brown Instrument Company,
Philadelphia,
Penna.

Gentlemen:

The accurate control and permanent record of temperature and humidity are of the utmost importance in conditioning silk, rayon and woolen yarns.

In equipping all "H-W" Conditioners with Brown Control Hygrometers we have felt that it is better economy to use the finest type of control equipment available.

Our selection of Brown Controls for this critical requirement has been fully justified by the very satisfactory results obtained on many installations.

Very truly yours,
THE INDUSTRIAL DRYER CORPORATION
F. W. Caesar
FWC:KH F. W. Caesar - Vice President.

Here are a Few Well Known Users of Brown Control Hygrometers and H-W Conditioners

Cooper-Wells & Co.
Bloomsburgh Silk Mills
Pilot Full Fashioned Mills, Inc.
Concordia Manufacturing Co.
Concord Knitting Co.
Malina Co. of N. J., Inc.
Belmont Hosiery Co.
Moster & Feldman
Hankow Silk Importing Co.
Canadian Silk Products, Ltd.
Newmarket Mfg. Co.
Adams Millis Corp.

UNPRECEDENTED PERFORMANCE

To practical textile men results are more convincing than rhetoric.

The above letter is concerned with proper yarn conditioning—which requires accurate control of temperature and relative humidity.

In the leading textile plants where H-W YARN CONDITIONERS and BROWN HUMIDITY CONTROLLERS are installed, guesswork is eliminated from yarn conditioning, resulting in uniformity, proper twist setting and high quality yarn.

Brown Humidity Controllers make it possible for users of H-W Conditioners to control the desired temperature and humidity throughout the conditioning period—assuring best quality yarn—good knitting and weaving results irrespective of denier, amount of twist, or diameter of yarn package.

This is only one of the many uses for Brown Humidity Controllers in the textile industry. Brown Catalog No. 6501 will explain many more. Write THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4509 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Canadian factory: 117 Peter Street, Toronto. European address: N.V.N. Minneapolis-Honeywell Co., Wydesteeg 4, Amsterdam-C, Holland.

BROWN THERMOMETER CONTROLLERS
and
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS

To Measure and Control is to Economize

AS THE YEAR

This year, 1936, has established an all time high for the shipments of CROWN RAYON YARN.

To our customers we extend our sincere appreciation of their patronage, and also for their consideration during the period when shortage of yarn supply occurred due to flood at our Lewistown mill.

We offer our congratulations to the weavers, knitters and converters of the rayon industry, whose achievements in the development of new constructions and new finishes for rayon fabrics have contributed so greatly to the progress of the entire industry.

CROWN

PASSES.....

PLANTS

Marcus Hook, Penn. • Lewistown, Penn. • Meadville, Penn.
Roanoke, Va. • Parkersburg, W. Va. • Nitro, W. Va.

SALES OFFICES

New York City • Providence, R. I. • Charlotte, N. C.
Philadelphia, Penn. • Chicago, Ill.

THE VISCOSE COMPANY

World's largest producer of Rayon

200 Madison Avenue • New York City

RAYON

VISCOSE

CUT RAYON STAPLE

ACETATE

COPR. 1936—THE VISCOSE COMPANY

IT GOES HAND IN HAND WITH QUALITY AND ECONOMY

WE do not feel that we have to argue or demonstrate the superior QUALITY of yarn made on our new GIANT Package Mule, for this yarn is still MULE SPUN in every sense of the word. Experienced textile men KNOW that mule spun yarn is stronger, more elastic, more lofty, and more accurate in size than yarns made by any other method.

However, since the GIANT Package is a new development in mule spinning, the woolen industry is entitled to some concrete facts in order to determine the relative ECONOMY of this improved process.

In this connection, the following figures speak for themselves. We guarantee that they are accurate and conservative.

This increase in production (due to less doffing) is in spinning only. However, don't forget that there are other important savings in spooling and in burling. For instance, tests have shown a spooling production of 45.625 lbs. from GIANT PACKAGES in 16 3/8 minutes as compared with 42.375 lbs. from small packages in 36 minutes (a gain of 54.5%).

The GIANT PACKAGES (2¼" gauge) produced only 173 knots per spool while the small packages produced 231 knots per spool (a reduction of 25%). This automatically reduces burling cost.

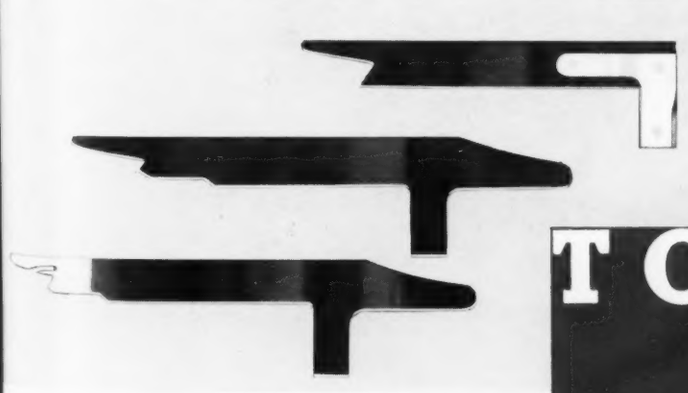
Complete data on these tests, which were made under normal operating conditions, will be supplied on request.

Lot	Run	Pounds in 8 Hr.		% Efficiency		Draws per Minute		Production Increase
		Sm. Pkg.	G. Pkg.	Sm. Pkg.	G. Pkg.	Sm. Pkg.	G. Pkg.	G.P.Mule
A	1¼	490	652	74-6/10	80	4.20	5.50	33-1/3%
B	1-1/16	369	469	65	70.2	3.00	3.53	27.1%
D	1¼	339	464	66.5	77.2	3.00	3.53	36.8%

JOHNSON & BASSETT, INC., WORCESTER, MASS.

CANADIAN REPRESENTATIVE: W. J. WESTAWAY & CO., LTD., HAMILTON, ONT., CANADA

The smoother your needles are finished, the more evenly the threads glide across their surfaces, the more uniform the stitches they produce. Good knitters know the value of fine finish ...and Torrington assures it—by applying *machine* precision in the production of Torrington needles. The Torrington machine-made method means not only that the steel is smoother but less subject to *variation* in smoothness. If more accurate and uniform knitting is your aim, let Torrington needles and sinkers—made by machines throughout—help you to achieve it!



WE CALL YOUR ATTENTION to the fact that Torrington now offers sinkers, dividers and split dividers...machine-made... built with the same careful attention to accuracy and uniformity of detail that has established the reputation of Torrington Needles.

TORRINGTON

NEEDLES and SINKERS

"I'll say it's smart—— and it wears well, too"

AMERICA is fast becoming ski conscious. Every year more and more enthusiasts are taking to the snow trails. And every year they grow more particular about the costumes they wear. Smartness is a requisite...and ability to give long service must be there, too. The knitting of ski-suits calls for good needles...needles that do good work in heavy materials . . . Torrington needles! Torringtons are machine-made. That's why their exceptionally smooth finish is as uniform as the fine temper and sturdiness for which they are famous. These are qualities that lead to better, smoother, more uniformly knitted fabrics. Use Torringtons. You'll find they will go a long way towards helping you turn out merchandise that inspires a customer to say, "I'll say it's smart . . . and it wears well, too."

There's a Torrington needle for this type of knitting and every type of knitting.

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

BRANCHES:

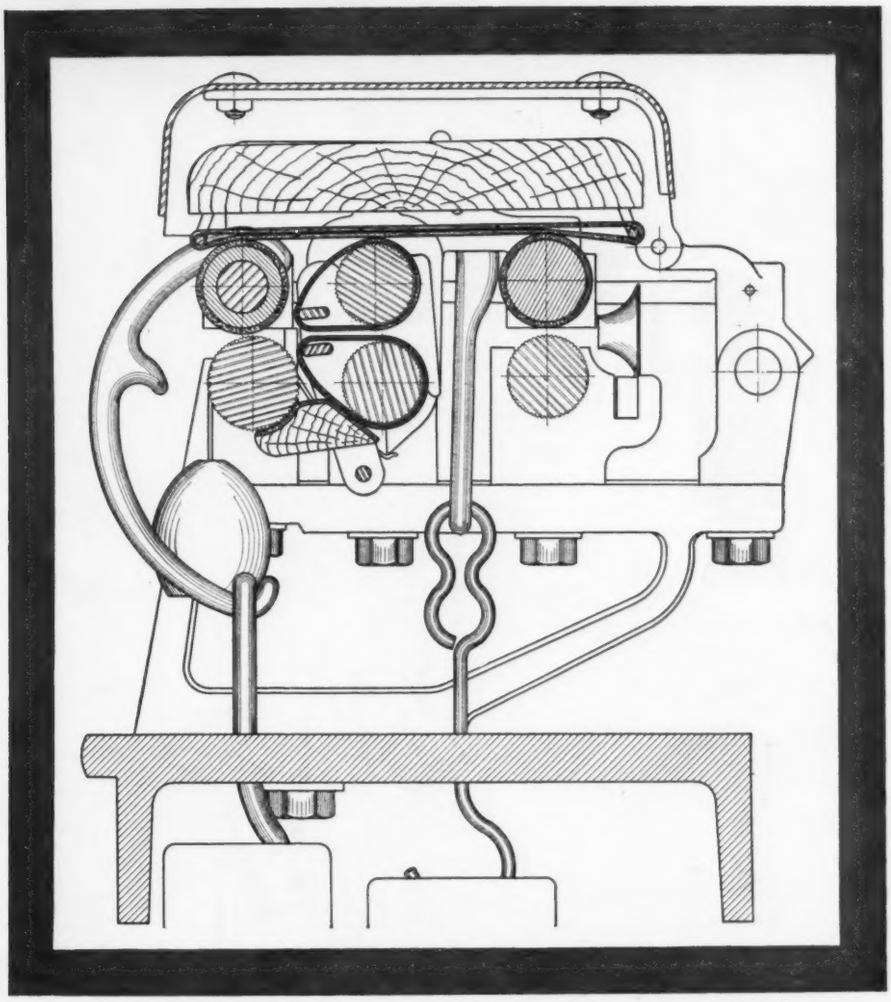
THE TORRINGTON COMPANY,	1640 FAIRMOUNT AVE.,	PHILADELPHIA
THE TORRINGTON CO., INC.	200 FIFTH AVE.,	NEW YORK, N. Y.
THE TORRINGTON COMPANY,	538 SOUTH WELLS ST.,	CHICAGO, ILLINOIS
THE TORRINGTON COMPANY,	GUILFORD BLDG.,	GREENSBORO, N. C.
THE S. M. SUPPLIES CO.,	210 SOUTH STREET	BOSTON, MASS.
LOS FABRICANTES UNIDOS,	964 CALLE BELGRANO,	BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN. — UPPER BEDFORD, QUEBEC

COVENTRY, ENGLAND — AACHEN, GERMANY

TORRINGTON *Latch* NEEDLES



BUY ON WHITIN—

CASABLANCAS PERFORMANCE

Do you spin 16's yarns, or coarser?

Most of your competitors are using Whitin-Casablancas Slubbers.

Do you spin yarns within the range of 20's to 30's?

Let us tell you about the advantages of Whitin-Casablancas Long Draft on 8 x 4" Roving Frames.

Whitin-Casablancas Roving long draft is simple, cheap and effective. It SAVES floor space. Every installation has paid for itself in three years or less — sometimes within eighteen months.

One hundred American Mills have bought this equipment for more than 80,000 spindles.

No machinery investment made today will pay for itself more quickly!

WHITIN MACHINE WORKS

CHARLOTTE, N. C. WHITINSVILLE, MASS. ATLANTA, GA.

***GARDINOL WA**

***GARDINOL LS**

*Patented

AVAILABLE IN BOTH FLAKE AND PASTE FORM

*"Gardinol" is the registered trade mark used by the Gardinol Corporation to designate its sulfated higher alcohols.

USE

GARDINOL*

REG. U. S. PAT. OFF.

for soaping off printed cottons, silks, rayons

GARDINOL offers many advantages in soaping printed goods of all kinds as well as vat, sulfur, naphthol and azoic dyeings. It eliminates scum and sticky deposits from hard water soaps and prevents scum formation or spotting from bichromate or acid carried over into the soap compartment. It reduces the tendency of colors to bleed, and saves time and money in changing water and cleaning boxes.

GARDINOL brings out the full shade of color on cottons, clarifies the white areas in prints, and produces more attractive fabrics.

In soaping printed silks and rayons, GARDINOL eliminates alkalinity and permits economies through the use of unsoftened water. It greatly reduces the amount of rinsing necessary.

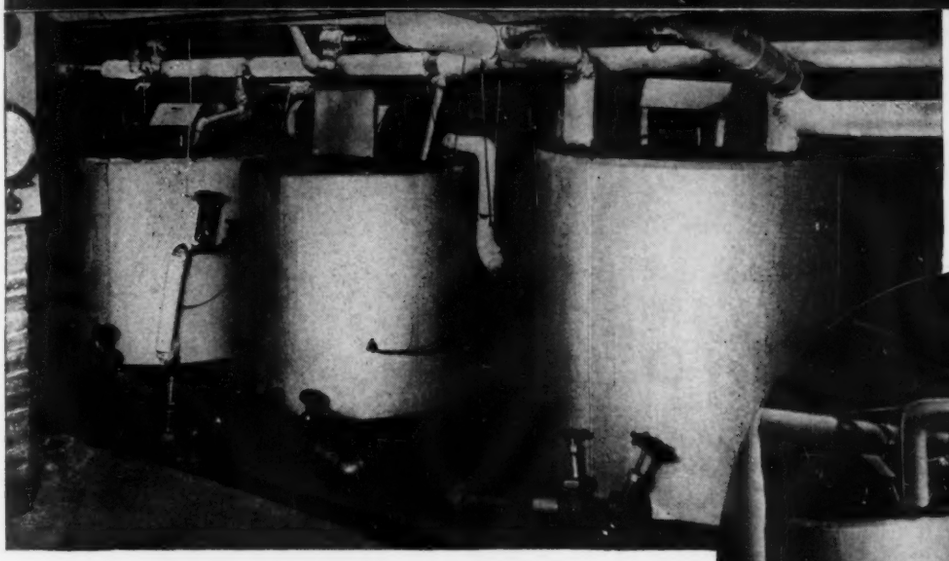
A representative of any of the sales agents listed below will gladly give you complete information about GARDINOL, and demonstrate its application to your own problems.

GARDINOL CORPORATION, GENERAL OFFICES, WILMINGTON, DELAWARE

SALES AGENTS

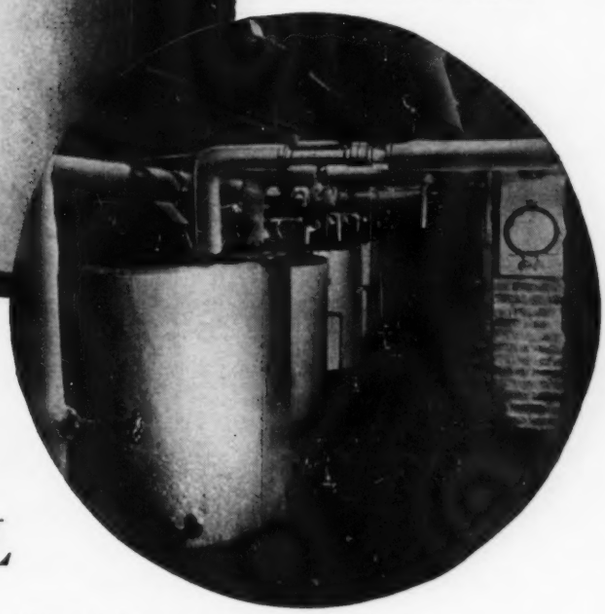
Procter & Gamble, Cincinnati, Ohio. National Aniline & Chemical Co., Inc., N.Y.C.
E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware

Any Size CRACK *is* TOO BIG *in a Size-Kettle!*



Three of the nine Nickel-Clad Steel size-kettles (cookers and storage), installed at the plant of West Point Mfg. Co., West Point, Ga., Lanett Mill division. The kettles were fabricated by R. D. Cole Mfg. Co., Newnan, Ga., of ¼-in. thick 10% Lukens Nickel-Clad Steel, using welded construction throughout.

(Below) The other six of this plant's nine size-kettles. Of the nine, seven are cooking kettles, 42 in. dia. x 42 in. high; two are storage kettles, 48 in. x 48 in. Agitators and heating coils in all are Monel.



Eliminate cracks . . . build your kettles of NICKEL-CLAD STEEL

GIVE a thought to the question of costs on your cooking and storage size kettles. Better still, take a little time to get *the exact figures* on how often you've repaired and replaced them the last two years.

For here's a new way to cut those costs way down. New, that is, to some textile men. Those who have tried it are keen about it.

Nickel-Clad Steel kettles outlast by years the ones you're used to . . . because they cut out the source of the chief source of wear. In tanks with a separate corrosion resistant lining, you often find the lining has failed because of cracking. Once that happens, it means repairs, and repairs mean costs.

But here's how Nickel-Clad Steel works. It's not a separate lining. It is a permanently bonded bi-metal, 10% or 20% of the thickness pure Nickel. Steel for economy, Nickel for corrosion resistance. And the only surface that touches the contents is pure Nickel.

No fear of these two metals coming apart. We'd like to send you a sample of Nickel-Clad Steel so that you may see and test for yourself that the Nickel does not separate from the steel during deformation in forming and fabricating.

Ever since the West Point Mfg. Co. had these kettles made of Nickel-Clad Steel, they've found that cracks are OUT for good. And cracks are what put size kettles on the repair list.

For slasher drums, the same properties make Nickel-Clad Steel the ideal metal for long life.

Send the coupon to-day. Nickel-Clad Steel is easily fabricated. And somewhere near you is an experienced fabricator who can start cutting your costs.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET NEW YORK, N. Y.

TW 12-36

The INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

Gentlemen: Kindly send me the name and address of the nearest fabricator experienced in handling Nickel-Clad Steel.

Name .....

Firm .....

Address .....

City ..... State .....

NICKEL-CLAD STEEL

Home or Hosiery—
BUILD on a SOLID FOUNDATION

Penny wise and pound foolish the man who skimps a building foundation!

Smart is the management that puts enduring strength into the foundation of its hosiery—into toe and heel, sole and welt—with B&C Quality Yarns.

Wearing qualities, uniformity, lustre, strength elasticity—you'll find them all in B&C yarns.

COTTON & MERCERIZED YARNS

BOGER & CRAWFORD

Philadelphia

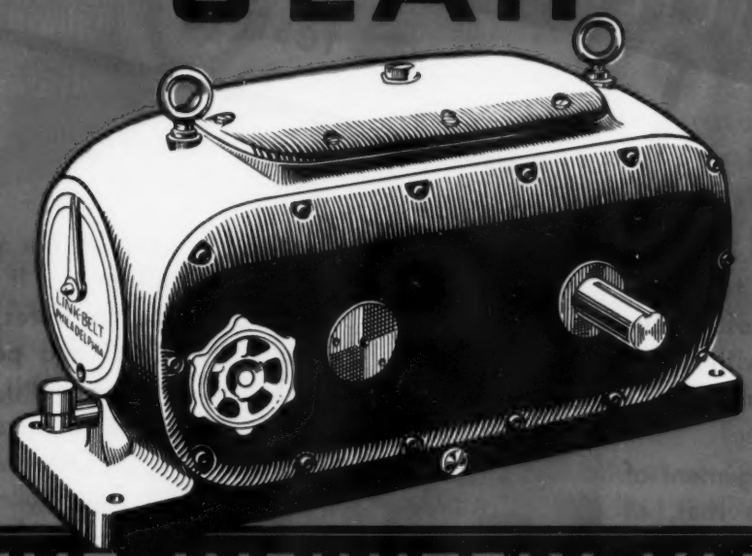
CHATTANOOGA, TENN. BOGER CITY, N. C. CHICAGO, ILL.
BOSTON, MASS. UTICA, N. Y.

Representatives in the principal Textile Centers in all Foreign Countries

LINK-BELT

P.I.V.

GEAR



POSITIVE INFINITELY VARIABLE SPEED TRANSMISSION

● Infinite variation—fractional revolution speed changes made and maintained with micrometer precision. Tooth-to-tooth contact of its unique drive chain with conical wheels, do not permit slip. Compactness and flexibility of application are other outstanding features of the P.I.V. Gear. It is available for horizontal and vertical mounting of the basic unit; also motorized, and with gear reduction sets. Can be arranged for manual or automatic operation. Send for Book No. 1574. Address Link-Belt Company, Philadelphia, Chicago, Indianapolis, Atlanta, San Francisco, Toronto, or any of our offices located in principal cities.

LINK BELT POSITIVE DRIVES INCLUDE

"WE PREFER H & B LONG DRAFT"

Says a New England Mill after Two Years of comparative testing . . .

SIMPLICITY THE SECRET OF EFFICIENCY

For two years a large New England mill has been making comparative tests (on a comprehensive manufacturing scale) of the three major types of long draft spinning, with respect to strength and quality of yarn, maintenance cost of machinery and return on investment.

Recently the management of this mill informed us that, all things considered, they prefer H & B Four Roller Long Draft to other types of long draft.

H & B Long Draft's maintenance cost is about the same as that of a three-roller system and it also compares very favorably with the latter as to ease of cleaning.

H & B Long Draft does not hamper the natural movement of the fibres. It permits the longer fibres to assume their natural position at the core of the yarn, thus preserving strength and uniformity. It controls a large percentage of the shorter fibres, but at the same time prevents "plucking" and permits fly (and other waste) to fall clear, so that it can not bunch up and is not carried into the yarn.

Other advantages of H & B Four Roller Long Draft and the reasons for these advantages are given in a descriptive folder, which will be mailed on request.

This southern installation effected a 25% increase in production and a 20% increase in breaking strength. Further details on request.

H & B AMERICAN MACHINE COMPANY

Cotton Preparatory and Spinning Machinery

PAWTUCKET, R. I.

BOSTON OFFICE, 161 Devonshire Street.
ATLANTA OFFICE,
815 The Citizens and Southern National Bank Bldg.
CHARLOTTE OFFICE, 1201-3 Johnston Bldg.

H&B

FOUR ROLLER LONG DRAFT SYSTEM

MORE THAN 75,000

Samples of Water Have Paraded Through Our Laboratories

FROM all parts of the country samples of water come to Permutit laboratories for analysis and recommendations.

Of the thousands of problems thus presented, few have been as difficult—or even as large, in terms of volume of water to be treated or actual dollars at stake—as those concerned with textile processing.

In scouring, dyeing and bleaching of wools—the degumming, weighting, bleaching and dyeing of silk—the manufacture and dyeing of rayon—the boiling-off, bleaching, dyeing of rayon—the boiling-off, bleaching, dyeing and mercerizing of cotton—the use of clean, uniformly soft, iron-free water is essential to standardized quality and economical production. Permutit can supply that essential to any plant, on any scale from any adequate source, by efficient water treatment methods, materials and equipment.

There is another application—steam production. Here—by supplying soft water for boiler feed—by furnishing Ranarex Mechanical CO_2 Meters for guidance to efficient boiler firing—Permutit has enabled mill managements to largely improve fuel economy, reduce boiler maintenance expense and increase availability of boiler capacity.

Write for special bulletin—"Reducing Textile Costs and Troubles." Address THE PERMUTIT COMPANY, Dept. B, 330 West 42nd St., New York, N. Y.

Permutit

Water Conditioning

KNITTING YARNS

For Men's, Women's, Children's

BATHING SUITS

OUTERWEAR, UNDERWEAR

HOSIERY

HAND KNITTING YARNS

WHITE IN OIL

TWEED COLORINGS

in an extensive range of combinations

HEATHERS AND OXFORDS

AMERICAN WOOLEN COMPANY

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MICROMETRIC ACCURACY

Arrived at by Scientific Study— Protected by Scientific Construction

STEHEDCO Reeds are renowned for their perfect accuracy of dent size as well as dent spacing. This micrometric accuracy, together with the exclusive STEHEDCO super-fine finish, assures a flawless run of cloth as far as the elimination of reed marks and obtaining a perfect warp spacing is concerned.

Such accuracy does not "just happen", but is the result of years of concentrated study and experiment, and the designing of special machinery (exclusively our own) by our Research Engineers — machinery that rolls and polishes the wire within limits of one ten thousandth of an inch. Advanced construction design that spaces the dents to the same close limits, assures retention of this perfect accuracy under constant heavy-duty service, and guarantees each reed being identical with the previous lot.

Precision inspection of the product in the various stages of manufacturing guarantees a most uniform product in particular where air space is of vital importance.

It will pay you to consult with one of our Field Representatives when he calls.

QUALITY LOOM HARNESS EQUIPMENT

TRADE MARK

stehedco PITCH BAND AND ALL-METAL REEDS

FURNISHED WITH FLAT OR OVAL WIRE—ANY DESIRED COUNT

1st
IT IS A COMPLETE LINE

Why it is to *Your* interest to demand --

QUALITY LOOM HARNESS EQUIPMENT

Stehedco

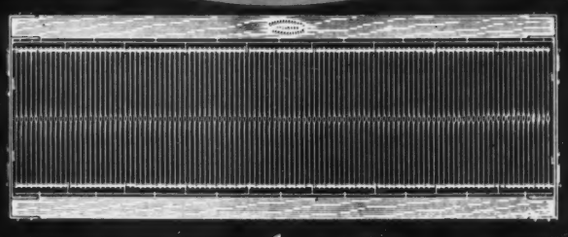
LOOM HARNESS EQUIPMENT

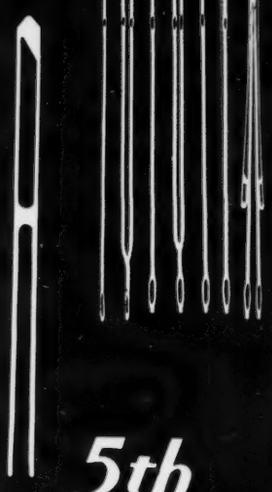
YOU ARE ASSURED THE ORIGINAL PRODUCT

The unprecedented originality of STEHEDCO products is recognized by the trade as an outstanding feature.

YOU ARE ASSURED A TRIED AND PROVEN PRODUCT

Because each item is a product of research, science, and exhaustive tests. The experimental work has been done for you—there's no uncertainty as to the results.





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YOU ARE ASSURED AN UNEQUALLED FINISH

To obtain the superlative finish and exactness up to our super standard it was necessary for us to design and build our own unexcelled equipment used for this work.

5th
YOU ARE ASSURED THE MOST ECONOMICAL PRODUCT

Although possibly not the lowest in first cost, STEHEDCO Equipment will give you the greatest return on the money invested, which is the truest gauge of economy, as there is much more money involved in the RESULTS obtained than in its first cost.

6th
ECONOMICAL AND CONVENIENT DISTRIBUTION

Three plants strategetically located for this purpose

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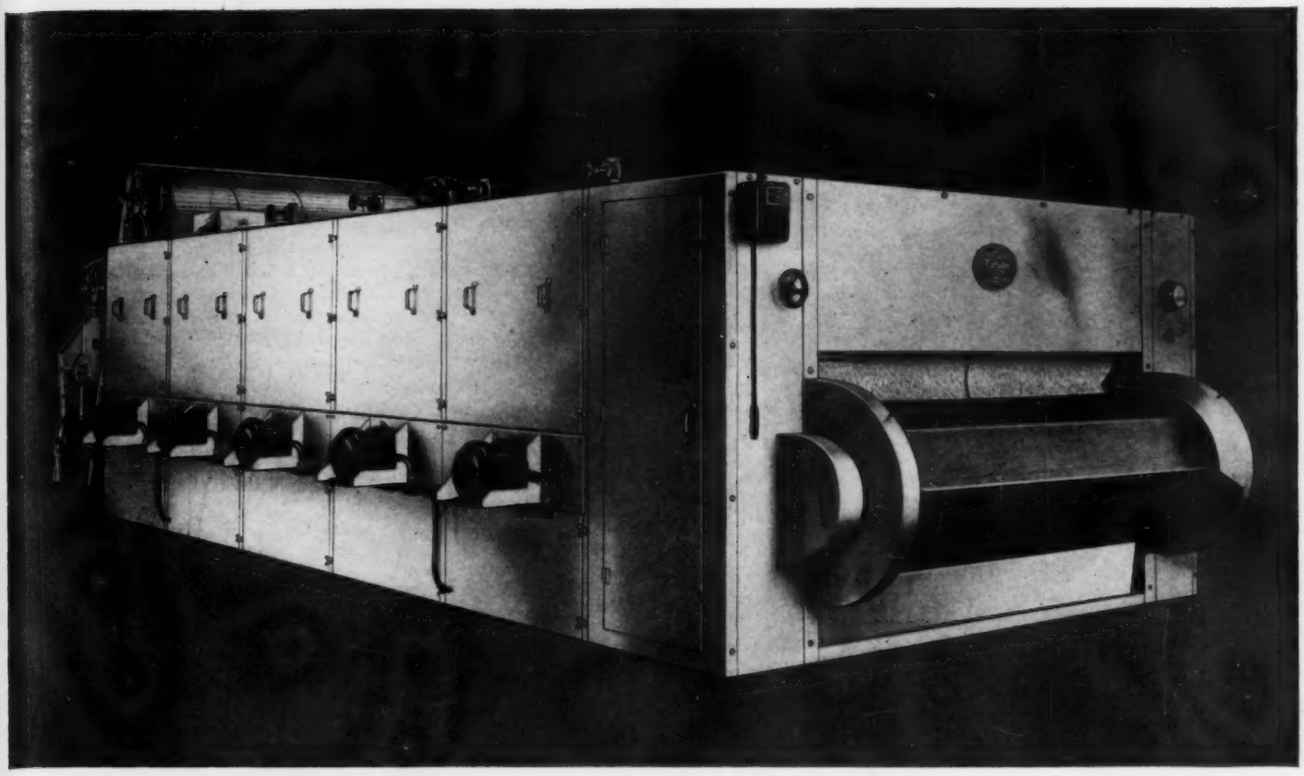

47 Installations

Testify to The Value of This

Hunter Dryer

The dryer illustrated above is the efficient Hunter Duplex Raw Stock Single Apron Dryer. It has proved its merit in forty-seven different installations. For example:

In four plants of a giant textile company it produces eight hundred pounds of dyed stock per hour for each unit in less than thirty lineal feet of floor space. In a Rhode Island mill it produces eighteen hundred pounds of dyed stock hourly in less than forty feet of floor space. It has made similar records on hair, rags, fur, scoured wool, and assorted fibers in plants ranging from New Zealand and France to North and South America.

Mail the attached coupon for details of this modern motor-driven unit, its copper heating coils, screens, steel plate apron, apron guards, and its low cost operation.

JAMES HUNTER MACHINE CO., North Adams, Mass.

Please send full details on the Hunter Duplex Stock Dryer. We would like full production figures for present installations.

Name _____

Mill _____

Address _____

TEXROPE DRIVES
for every industry

Do you want a large or small, a light or heavy, a constant or variable speed V-Belt drive? • Allis-Chalmers makes them all and not only makes them all but conceived and developed the entire multiple V-Belt principle. Also the Duro-Brace design which gives you a sheave with maximum strength and minimum weight and the Vari-Pitch design which enables you to vary your speed by making a simple adjustment. Therefore, if you want the greatest knowledge and the widest experience built into every V-Belt drive that you buy, you want Texrope V-Belt Drives built by the Allis-Chalmers Manufacturing Company. Texrope Drives are made in ranges of from ½ hp. to 2,000 hp. and in speed ratios from 1 to 1, to 10 to 1 in all popular ratings. Texrope Drives are 98.9% efficient . . . Require no belt dressing or lubrication . . . Are unaffected by moisture or dust . . . Are shock absorbing, vibrationless, slipless, silent and clean. • The Allis-Chalmers Manufacturing Company invites you to install a Texrope Drive with its guarantee of satisfaction or money back.

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Belts by Goodrich

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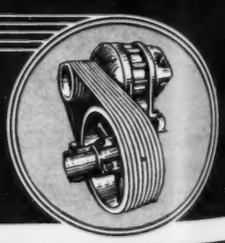

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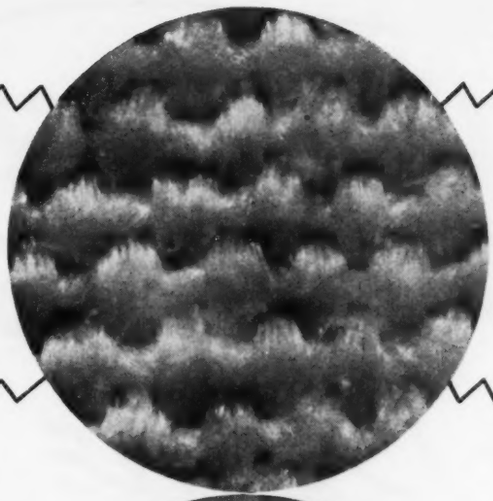

Photo-micrograph (75 times actual size) of a section of woven silk fabric after degumming. The broken and chafed filaments show graphically the damage that can be done to delicate silk fibers when a soap lacking the proper gentleness is used in the boil-off.

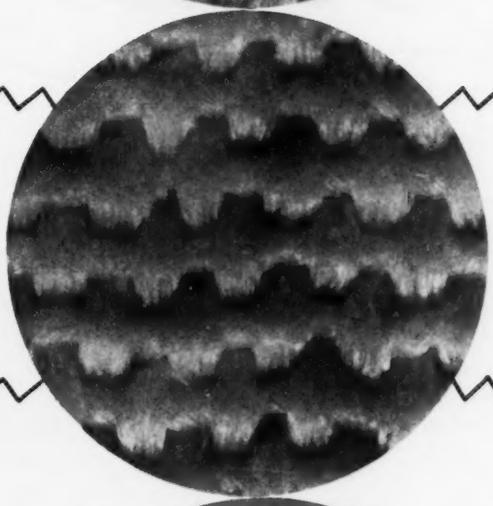

Photo-micrograph (75 times actual size) of a section of woven silk fabric degummed in an Olate solution. Note the clear, even, unblemished surface of the filaments, the freedom from fuzziness and broken ends. Here is definite proof that Olate's gentle action in the boil-off gives perfect protection to silk fibers.

Olate *the universal textile soap*

PROTECTS SILK FILAMENTS AGAINST BREAKING AND CHAFING

Credit the gentleness and exceptional lubricating properties of Olate for a big share of its success in degumming silk hosiery and piece goods. For only gentle action and proper lubrication like this can give adequate protection against broken or chafed filaments . . . frequent trouble-makers in the boil-off.

You can eliminate much of the trouble and guesswork from the degumming operation by using this pure, neutral, low titer soap. Degumming gets under way fast in an Olate solution. Penetration is rapid, thorough and even. And Olate's low degree of hydrolysis assures both positive control of degumming and added protection in the dye bath.

Try Olate. It will help you to turn out a better, safer degumming job — more saleable goods. And it will save you time, labor and money.

PROCTER & GAMBLE • General Offices • Cincinnati, Ohio

FOR *REAL SERVICE* ON BRASS FITTINGS *Come to Crane*

WHETHER your need for brass fittings is for an occasional piece or for a complete piping layout, your local Crane branch carries an exceptionally complete line ready for immediate delivery. There is no bother, no need of tiresome "shopping" to find the exact type of fitting you want. Crane has it and can supply your need immediately.

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For valves and fittings of brass, cast-iron, malleable iron or steel, come to Crane. Its lines are complete and unexcelled in merit. There is a Crane branch or distributor in your city or immediate vicinity.

For list prices on Crane Standard Brass Fittings (rough) see page 252, new Crane No. 52 Catalog. Dimensions on facing page No. 253

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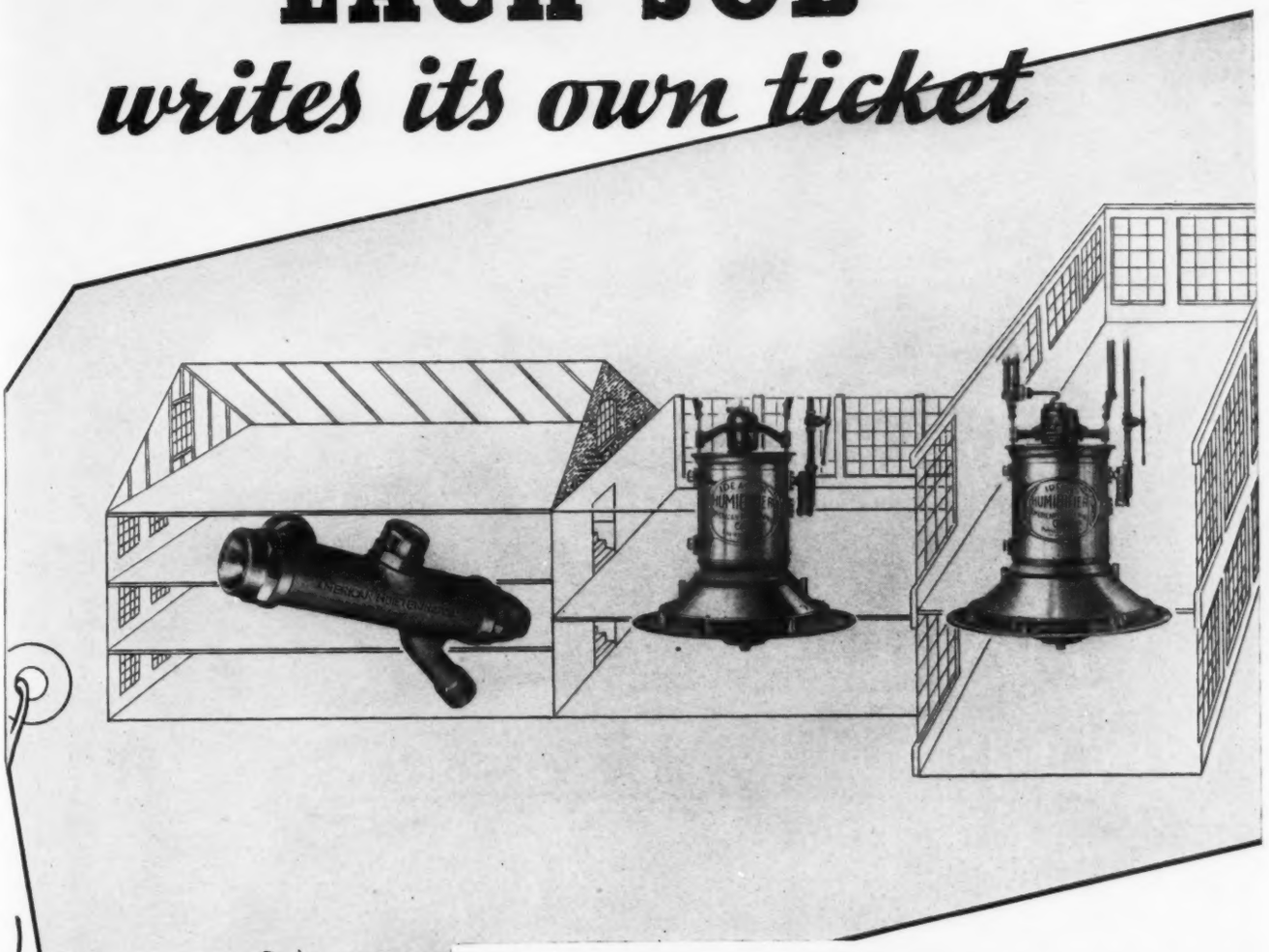
EACH JOB
writes its own ticket



FOR THE AMCO ENGINEER

Many mills — perhaps your own — offer varied conditions like those illustrated, where a single humidifying device throughout simply *won't do.*

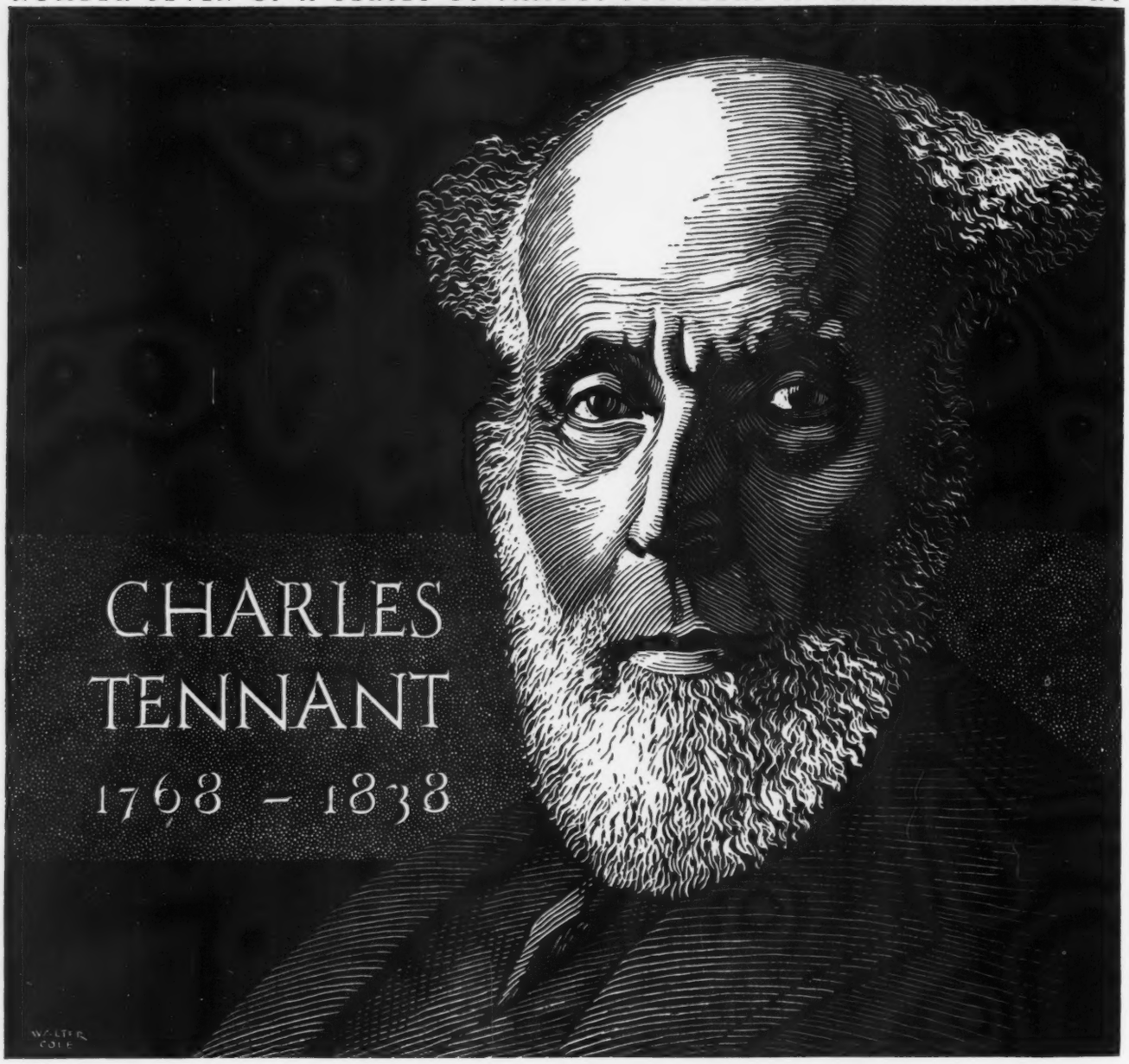
Ceiling height, for instance, may be an important factor. Suppose the old original building now houses carding machinery. Its low ceilings automatically call for Amco Self-cleaning Atomizers. The weave shed is a more modern building — its normal ceiling obviously specifies Ideal Junior Humidifiers. The brand new "ell" where modern spinning frames whir in a high, light room is the perfect spot for Ideal Senior Humidifiers.

Thus the Amco engineer, schooled by years of process studies of cotton, worsted and woolen manufacture, draws on the many tools in the wide Amco line for the one device exactly suited to each condition. Letting each job write its own ticket for equipment required, he assures the maintenance of adequate humidity in the operation of every manufacturing process. American Moistening Co., Providence, R. I., Boston, Mass., Atlanta, Ga., Charlotte, N. C.

AMCO HUMIDIFICATION

TAKE YOUR HUMIDIFICATION JOB TO A HUMIDIFICATION SPECIALIST

NUMBER SEVEN OF A SERIES OF FAMOUS PIONEERS IN CHEMICAL HISTORY



TEXTILE bleaching was shortened from a matter of months to a matter of hours when Charles Tennant, an "eminent practical chemist" of Glasgow, produced the first bleaching powder by saturating lime with chlorine. Others had recognized the possibilities offered by the decolorizing action of chlorine upon fabrics, but Tennant made chlorine available in commercial quantities in a form that could be transported and readily applied. In the United States, the earliest production of bleaching powder was in 1895, when Mathieson placed the first domestic product on the market. Since this early pioneering venture, Mathieson has been in the forefront of new developments in the production and distribution of chlorine and chlorine products and in the efficient application of these products in textile bleaching, in paper and pulp bleaching, in petroleum refining, in water purification and in other important fields.

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In its Annual Proceedings of 1839, the Institution of Civil Engineers, London, said of Charles Tennant: "The great revolution in the practice of bleaching... was carried out by the discoveries made by him, first of the Solution of Chloride of Lime and afterwards of the dry Chloride of Lime, or bleaching powder—an inestimable gift to the arts with which the name of Mr. Tennant will always be associated. He... will long continue to be extensively known and associated with practical science."

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